Graduate Council Agenda
October 19, 2017
Library 6th Floor Conference Room 603

Meeting called to order

1. Approval of September 21, 2017 Minutes
    a. Motion: Gil Fowler. Second: John Mello. Pass
2. Graduate Faculty Status Requests
    a. Temporary
        i. 2017G_NC03_Tem_Fac_Karen_Blackwood

        2017G_NC05_Temp_Fac_Clifford_Blumberg

        2017G_NC07_Temp_Fac_George_Ackerman

        2017G_NC09_Temp_Fac_Dwayne_Powell

        2017G_NC11_Temp_Fac_Kevin_Unter

            1. NC03, 05, 07, 09, 11 considered together
            2. NC03 and NC07 updated to 3 year duration
            3. Motion: John Mello. Second: Gil Fowler.

        ii. 2017G_NC10_Temp_Fac_Alexander_Sydorenko

            1. General discussion regarding intention of “Temporary Graduate Faculty Status,” and the default graduate faculty standards.
            2. Action was tabled until further information is received. Chair of Graduate Council will request more information from Alexander Sydorenko.

        iii. 2017G_NC04_Temp_Fac_Shanon_Brantley

        2017G_NC06_Temp_Fac_Brinda_McKinney

        2017G_NC08_Temp_Fac_Krista_Susan_Snellgrove

            1. Removed from consideration due to promotion

    b. Regular
        i. 2017G_NC12_Reg_Fac_Richard_Segall

        2017G_NC13_Reg_Fac_Joe_Nichols

        2017G_NC14_Reg_Fac_David_Kern

2017G_NC15_Reg_Fac_Deborah_Persell

2017G_NC16_Reg_Fac_Susan_Whiteland

2017G_NC17_Reg_Fac_Catherine_Reese

1. NC12-17 considered together
2. Motion: Ashley Schulz. Second: Lauren Schack Clark. Pass

3. Graduate Faculty Status Guidelines
    i. None submitted.
4. Course Proposals
    a. Subcommittee 1 – Lead by Gil Fowler
        i. 2017G_SM22_NC_CSED-5043-Principles-of-Computer-Programming

2017G_SM23_NC_CSED-5231-Principles-of-Operating-Systems

2017G_SM24_NC_CSED-5241-Principles-of-Computer-Organization

2017G_SM25_NC_CSED-5731-Principles-of-Abstract-Structures

2017G_SM26_NC_CSED-6113-Principles-of-Software-Engineering

2017G_SM27_NC_CSED-6713-Principles-of-Analysis-of-Algorithms

2017G_SM28_NC_CSED-6723-Principles-of-Automata-Theory

2017G_SM29_NC_CS-5613-Mobile-Application-Development

2017G_SM30_NC_CS-6463-Image-Processing

2017G_SM31_NC_CS-6613-Bioinformatics

2017G_SM32_LON3_CS-MS-Cyber-Security-Emphasis-REVISION1

2017G_SM33_LON3_CS-MS-Data-Science-Emphasis-REVISION1

2017G_SM34_LON3_CS-MS-High-Performance-Computing-REVISION1

2017G_SM36_LON11_CS-MS-Cyber-Security-Certificate

2017G_SM37_LON11_CS-MS-Data-Science-Certificate

2017G_SM38_LON11_CS-MS-High-Performance-Computing-Certificate

1. SM22-34, and SM36-38 considered together

2. Motion: Gil Fowler. Second: Steve Green. Pass

ii. 2017G_SM35_LON11_CS-Education-Certificate

2017G_SM39_LON11_CS-MSE

1. SM35 and SM39 need COPE approval

2. Motion: Gil Fowler. Second: Steve Green. Pass, contingent upon COPE approval

3. COPE approved both proposals 10/25/2017

b. Subcommittee 2 – Lead by Steve Green

i. 2017G_NHP05_BC_MAT-Sept-2017

2017G_NHP06_CD_PT-7323

2017G_NHP07_CD_PT-7512

2017G_NHP08_CR_PT-8181-REVISION1

2017G_NHP09_LON5_tDPT

2017G_SM05_NC_BIO-5823-Nat-Hist-Coll-Rsch-Design-REVISION1

2017G_SM13_NC_CS-6243-Distributed-Systems

2017G_SM14_NC_CS-6253-Heterogeneous-Computing

2017G_SM15_NC_CS-6263-Cloud-Computing

2017G_SM16_NC_CS-6323-Computer-Security

2017G_SM17_NC_CS-6333-Network-and-Internet-Security

2017G_SM18_NC_CS-6343-Cloud-Security

2017G_SM19_NC_CS-6443-Machine-Learning

2017G_SM20_NC_CS-6523-Data-Mining-Techniques

2017G_SM21_NC_CS-6543-Advanced-Database-Systems

1. NHP05-09, SM05, and SM13-21 considered together

2. Motion: Amanda Wheeler. Second: Hideya Koizumi. Pass

c. Subcommittee 3 – Lead by Shawn Drake

i. 2017G_EBS01_BC_Dyslexia-certificate-final

2017G_EBS02_LON13_EdS-Reading

2017G_EBS03_NC_RDNG-7423-studies-in-critical-literacy-REVISION1

2017G_EBS04_NC_RDNG-7493-Reading-and-Writing-Capstone-for-the-Specialist-Degree

2017G_LAC01_CD_FR-560V-SPAN-560V-delete

2017G_SM06_CR_CS-5032-course-title

2017G_SM07_CR_CS-5413-course title

2017G_SM08_CR_CS-5423-course-title

2017G_SM09_NC_CS-5623-Fundamentals-of-Data-Science

2017G_SM10_NC_CS-6123-Software-Security

2017G_SM11_NC_CS-6223-Advanced-Computer-Architecture

2017G_SM12_NC_CS-6233-Operating-System-Design

2017G_SM40_BC_MSCS-p262

1. EBS01-04, LAC01, SM06-12, and SM40 considered together

2. Motion: Hideya Koizumi. Second: Lauren Schack Clark. Pass

5. Policy Group Follow-Up – Dr. Karen Wheeler

a. Karen Wheeler briefed the committee of the status of the Policy Group. They decided to expand the group and discussed a number of areas of work, including: probationary status, admissions, exceptions, Grad Faculty Status (potentially adding categories), suggestions versus policies, and minimum standards. Aiming for a deadline of Christmas.

Motion to adjourn: Shawn Drake. Second: Gil Fowler. Meeting adjourned at 4:06 pm.

Standard Subcommittee Memberships

Subcommittee 1	Subcommittee 2	Subcommittee 3
Gil Fowler	Steve Green	Shawn Drake
Deborah Chappel Traylor	David Jeong	Debbie Shelton
Lauren Schack Clark	Amanda Wheeler	Fabricio Medina Bolivar
Lauri Umansky	Steve Bounds	Hideya Koizumi
John Mello	Ashley Schulz	Rokib Hasan
Can review: AET, EBS, NHP, SM	Can review: BU, LAC, NHP, SM	Can review: AET, BU, EBS, LAC

To access graduate faculty status applications:
http://www.astate.edu/a/shared-governance/shared-governance-committees/undergraduate-curriculum-council/graduate-council/noncurricular

Password: **Grad_Faculty**

To access curricular proposals
https://www.astate.edu/a/shared-governance/shared-governance-committees/undergraduate-curriculum-council/graduate-council/current-documents.dot

Code # Enter text...

Bulletin / Banner Change Transmittal Form

[ ] **Undergraduate Curriculum Council**

[x] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Joanna Grymes	4/18/2017	Rob Williams	9/25/2017
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Ron Towery	4/18/2017	Mary Jane Bradley	9/25/2017
Department Chair:		**Head of Unit (If applicable)**	
Wayne W. Wilkinson	4/20/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Mary Jane Bradley	4/25/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

1.Contact Person (Name, Email Address, Phone Number)
Ron Towery, rtowery@astate.edu, 8709723059

2.Proposed Change
Updating language of certificate description; replacing CD 6363 and ELAD 6423 with RDNG 6563 and RDNG 6533.

3.Effective Date
Spring 2018

4.Justification – *Please provide details as to why this change is necessary.*
Replacing two courses in the existing program that are either not offered at times public school teachers are available to take the course face to face and will be offered via distance learning options (CD 6363 Language and Language Disorders), or content of course was not well aligned to certificate needs (ELAD 6423 Special Education Law). These are being replaced with

Please note – any change to course number or course prefix should utilize the 'Course Deletion' form.

courses which provide Arkansas Department of Education specified content to meet the certificate requirements (RDNG 6563 Principles of Literacy Cognition and RDNG 6533 Literacy for Diverse Learners).
Updates to the program description better match the implementation of the certificate coursework and address Arkansas Department of Education terminology preferences.

Please note – any change to course number or course prefix should utilize the 'Course Deletion' form.

Revised 7/6/2016

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

~~**CERTIFICATE IN DYSLEXIA THERAPY**~~

DYSLEXIA ENDORSEMENT CERTIFICATE

This program has been designed to prepare licensed educators with the knowledge and skills necessary to ~~obtain an~~ add a dyslexia endorsement certificate ~~as a Dyslexia Therapist~~ to the teaching license in the state of Arkansas. In 2013, the 89th General Assembly in the State of Arkansas passed Act 1294 mandating that all teacher education programs offered by state-supported institutions of higher education provide appropriate dyslexia information for educators regarding the identification of students at risk for dyslexia and related disorders. Also stipulated in the law was a mandate requiring public schools to provide dyslexia intervention services to eligible students by the 2016-2017 academic year and that these services would be provided by persons with the appropriate training needed to provide such services. As a result of these legal mandates, the licensure endorsement program was developed at Arkansas State University from existing courses, both didactic and practical, and with existing faculty to provide appropriate higher education experiences necessary to address the letter and intent of Act 1294.

The program of study will be delivered as graduate level university credit at Arkansas State University and is comprised of fifteen (15) hours of graduate credits. These five (5) courses constitute a collection of courses already being taught at Arkansas State University ~~by three different academic departments~~. The department~~s~~ of Teacher Education~~, Educational Leadership Administration, and Communication Disorders have collaborated to combine areas of~~ contains expertise within ~~each~~ its faculty ~~necessary~~ to deliver the necessary instruction of appropriate knowledge and skills required by candidates seeking to become dyslexia therapists. The courses will collectively provide academic instruction of the knowledge base associated with the basic structure of language, the interaction between language and literacy, diagnostic principles and practices necessary for evaluating reading skills, multisensory approaches used to remediate reading deficits, and the legal mandates protecting the educational and civil rights of students receiving ~~therapy~~ dyslexia services in public school environments. These courses will be sequenced to culminate in a capstone experience in which each candidate will complete an extensive clinical practicum. ~~that will be supervised by university faculty members.~~

Candidates seeking this endorsement to teacher licensure will be required to be admitted to the graduate school at Arkansas State University with an academic advisor employed by the department of Teacher Education. These candidates are not required to maintain full-time student enrollment in the program of study. As a result, opportunities for in-service teachers to complete the program of study while maintaining public school employment will be available. Each candidate, in consultation with the academic advisor, must maintain a level of appropriate academic performance (as governed by the rules and regulations of the Graduate School) in order to persist in the completion of program requirements.

DYSLEXIA ENDORSEMENT

Certificate

University Requirements:
See Graduate School Degree Policies for additional information (p. 35)

Please note – any change to course number or course prefix should utilize the 'Course Deletion' form.

Revised 7/6/2016

Core Courses:	**Sem. Hrs.**
~~CD 6363, Language and Learning Disorders~~	3
RDNG 6563 Principles of Literacy Cognition	
~~ELAD 6423, Special Education Law~~	3
RDNG 6533 Literacy for Diverse Learners	
RDNG 6333, Reading Practicum I - Diagnosis and Intervention	3
RDNG 6513, Emergent Literacy Birth Through Primary Years	3
RDNG 6553, Adolescent Literacy	3
Sub-total	**15**
Total Required Hours:	

Please note – any change to course number or course prefix should utilize the 'Course Deletion' form.

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Letter of Notifications

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Joanna Grymes	8/29/2017	Rob Williams	9/25/2017
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Ron Towery	8/29/2017	Mary Jane Bradley	9/25/2017
Department Chair:		**Head of Unit (If applicable)**	
Wayne W. Wilkinson	8/30/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Mary Jane Bradley	9/5/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

If you require to fill out a Letter of Notification, please email curriculum@astate.edu or contact Academic Affairs and Research at (870) 972-2030 for guidance PRIOR TO submitting these through the curricular process.

1.Contact Person (Name, Email Address, Phone Number)
Dr. LaToshia Woods, ltwoods@astate.edu, 870-972-3939

Bulletin Changes

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N/A

LETTER OF NOTIFICATION – 13
EXISTING CERTIFICATE or DEGREE OFFERED via DISTANCE TECHNOLOGY

Institutions with at least one certificate or degree program approved for distance technology by the Arkansas Higher Education Coordinating Board must submit Letter of Notification-13 to request approval to offer additional existing (on-campus) certificates or degrees via distance technology. The institution must submit to ADHE a copy of the e-mail notification to the Higher Learning Commission (HLC) about the proposed distance technology program. If HLC requires a focused visit for the proposed distance technology program, please submit the scheduled review date.

Definitions

Distance technology (e-learning) – When technology is the primary mode of instruction for the course (50% of the course content is delivered electronically).

Distance instruction – When a course does not have any significant site attendance, but less than 50% of the course is delivered electronically, e.g., correspondence courses.

Distance program – When at least 50% of the major courses are delivered via distance technology.

1. Institution submitting request: *Arkansas State University*

2. Contact person/title: *Dr. LaToshia Woods, Assistant Professor of Reading*

3. Telephone number/e-mail address: *870-972-3939, ltwoods@astate.edu*

4. Name of Existing Certificate or Degree: *Specialist in Education in Reading*

5. Proposed Effective Date for distance technology delivery: *Spring 2018*

6. CIP Code: *13.1315*

7. Degree Code: *6915*

PROGRAM INFORMATION

8. Program summary/justification for offering program by distance technology:

   There is an increasing population of working adults who desire to enhance their education but find traditional college attendance unfeasible due to work constraints, etc. Thus, many working adults prefer the flexibility of an online degree as completion of an online degree will provide opportunities for career change or career enhancement. The current Ed.S.in Reading degree program at Arkansas State University is a flexible degree that gives students the necessary theory and skills to advance in their career and life goals in reading and literacy. Offering this degree online will expand the availability of the degree and give working adults an edge in a competitive world.

9. Provide the current certificate/degree plan. Mark* courses that will be taught by adjunct faculty.

   All courses taught by regular faculty members

Core Courses		
Course Number	**Course Title**	**Credit Hours**
RDNG 7613	Survey of Quantitative and Qualitative Literacy	3
RDNG 7473	Theories of Language Acquisition	3

RDNG 7653	Advanced Studies in Reading Comprehension	3
RDNG 7283	Writing Pedagogy: Advanced Process in Writing	3
Track 1: Advanced Perspective (students who hold a MSE in Reading)		
RDNG 7543	New Literacies	3
RDNG 7643	Social Foundations of Literacy	3
RDNG 7273	Multicultural Influences in Reading and Literature	3
RDNG 7393	Literacy Leaders as Community Advocates	3
		12 HOURS
Track 2: Professional Practice (students who hold a master's degree in another field)		
RDNG 6313	Theory and Practice in Teaching Reading	3
RDNG 6243	Reading in the Digital Age	3
RDNG 6563	Principles of Literacy Cognition	3
RDNG 6333	Reading Practicum I: Diagnosis and Intervention	3
RDNG 6353	Reading Practicum II: Leadership in Literacy	3
		15 HOURS
All candidates must complete a thesis under the supervision of the Department of Teacher Education graduate reading faculty and enroll in 6 hours of RDNG 7451-6: Thesis		**6 HOURS**
		TOTAL PROGRAM HOURS: 30-33

10. Provide the list of courses, include course number/title, for the certificate/degree program currently offered by distance technology.

RDNG 6333 Reading Practicum I: Diagnosis & Intervention
RDNG 6513 Emergent Literacy (Birth – Primary)
RDNG 6533 Literacy for Diverse Learners
RDNG 6553 Adolescent Literacy
RDNG 6563 Principles of Literacy Cognition

11. If 100% of the program will not be offered by distance technology, list courses that **will not** be offered by distance technology.

N/A

12. For existing courses that will be offered by distance technology (for the first time), provide the course syllabus for each of these courses for the certificate/degree program and indicate the maximum class size for each distance course.

Please see Appendix A for syllabi. Maximum class size is 500 students for all courses in program.

13. If new courses will be added, provide the list of new courses (proposed course number/title) and the new course descriptions for the certificate/degree.

Please see recently submitted LON 11C

RDNG 7423 Studies in Critical Literacy – Explores literacy as a critical social practice that may be used to enact social change within the classroom and beyond. Applications include the social context of literacy, multiple literacies, and the role of literacy in the production of power.

RDNG 7493 Reading and Writing Capstone – Serves as both the review and comprehensive

examination of program content with a focus on developing descriptive, analytical, and reflective writings that demonstrate effective applications of practices for literacy instruction.

14. Provide the course syllabus for each distance technology course for the program listed above and indicate the maximum class size for each distance course. Indicate the course delivery mode(s) and class interaction mode(s) for each distance technology course.

Course delivery mode (check all that apply):
Online X
Compressed-video (CIV)
Audio Conference
Video Conference
Web Conference
Blended delivery (identify components)

Class interaction mode (check all that apply):
Electronic bulletin boards X
E-mail X
Telephone X
Fax
Chat X
Blog X
Other (specify)

15. Provide the percentage of the program that is offered via distance (50%, 75%, etc.).

100%

16. Discuss the provisions for instructor-student and student-student interaction that are included in the program design and the course syllabus.

Students may contact the instructor via the instructor's email address, and instructors will have discussion with students via the Blackboard Learn Platform dependent on the course. Students may interact with Instructors through Skype, Zoom, or Blackboard Collaborate. Students may also call the instructor on the phone using the phone number provided by the instructor.

17. Provide a semester-by-semester degree plan/course schedule for student access to all courses necessary to complete the program.

Please see Appendix B

18. Provide a list of services that will be supplied by consortia partners or outsourced to another organization (faculty/instructional support, course materials, course management and delivery, library-related services, bookstore services, services providing information to students, technical services, administrative services, online payment arrangements, student privacy consideration, services related to orientation, advising, counseling or tutoring, etc.) **Include the draft contract/Memorandum of Understanding (MOU) for each partner/organization offering faculty/instructional support for the program.** Submit final contract/MOU signed by partner institutions or organizations upon completion of ADHE proposal review.

Arkansas State University will use Academic Partnerships for marketing and recruitment of potential students for this program. Arkansas State University may use Instructional Connections, Inc. to provide Academic Assistants to assist faculty with course grading.

19. Estimate costs for the proposed distance technology program for the first 3 years. Include faculty release time costs for course/program planning and delivery.

Assuming 2 courses are developed and offered per 7-week term. Faculty are not paid overload stipends during the Summer semester as courses are part of their regular earnings during this time frame.

Year 1			
Delivery (Overloads)	Costs	Development	Costs
8	$28,000	12	$18,000
Year 2			
Delivery (Overloads)	Costs	Development	Costs
8	$28,000	12	$18,000
Year 3			
Delivery (Overloads)	Costs	Development	Costs
8	$28,000	12	$18,000

20. Provide institutional curriculum committee review/approval date for proposed distance technology program.

Fall 2017

21. Provide documentation that proposed program has been reviewed/approved for distance technology delivery by licensure/certification board/agency, if required. [HLC review must follow ADHE review and AHECB program approval.]

The department curriculum committee, college curriculum committee, COPE, and graduate council will be notified of this proposal for distance technology delivery.

22. Provide additional program information if requested by ADHE staff.

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic Officer: Date:

Appendix A

12367

RDNG 6573

Action Research in Literacy Education

Spring

I Instructor Information

Dr. Ryan R. Kelly

Assistant Professor of Reading, Graduate Reading Programs Coordinator

Arkansas State University, School of Teacher Education and Leadership

College of Education and Behavioral Science

Office Location: Education/Communication Building, Room 374

Office Hours: Tuesday-Thursday, 9-11 AM (Tentative)

Direct Line: (870) 680-8445 Email: rkelly@astate.edu (Preferred)

Main Office: (870) 972-3059 Fax: (870) 972-3344

II. Course Texts and Resources

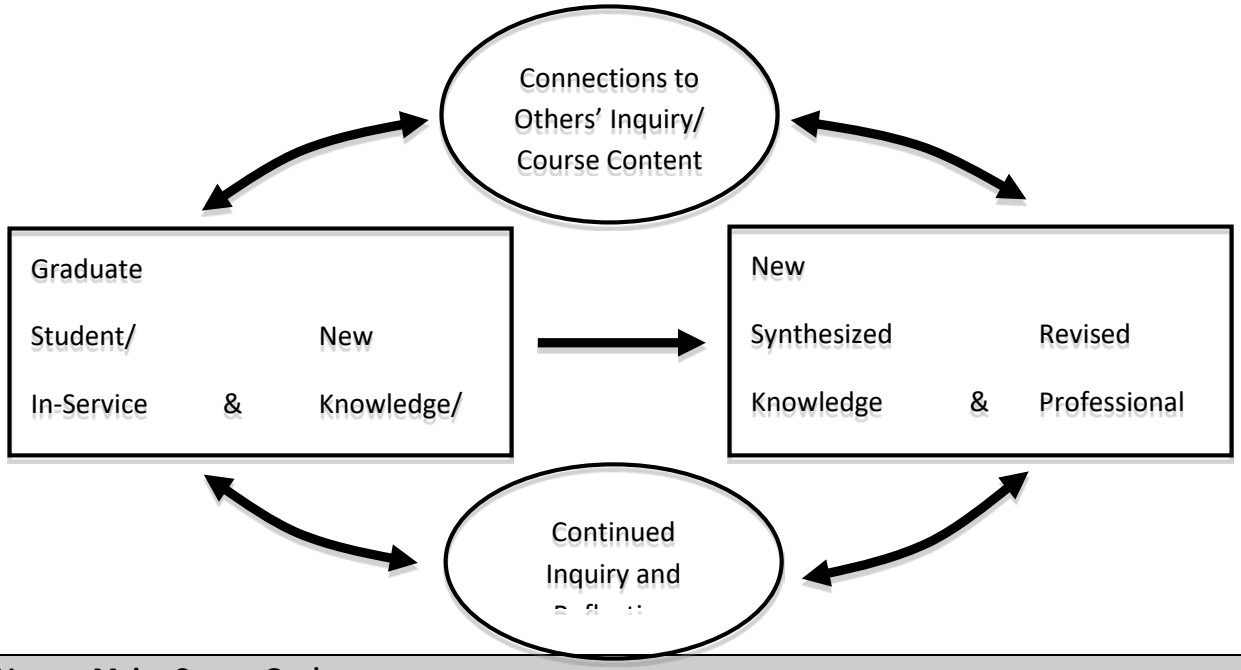
1. Stinger, E. (2007). Action research in education, 2nd ed. Upper Saddle River, NJ, Pearson Publishing. (ISBN #0-13-225518-9)

2. *Additional Weekly Readings in PDF Form or URL*
(Available via Blackboard)

III. Purpose or Goals of the Course

- Catalog description: Examination of theory and practice in action research as appliced to literacy education with practical application in literacy settings.
- Students will understand the use of action research in education and other professional environments as a way to investigate and promote effective literacy instruction methods in authentic settings.
- Students will design action research projects
- Students will implement approved action research projects and analyze results
- Students will engage in active forms of discourse on course topics

IV. Course Conceptual Model



V. Major Course Goals

1 Graduate students will design an action research project.

2 Graduate students will implement an approved action research project.

3 Candidates will analyze research findings and report findings in an action research project.

VI. Course Instructional Objectives

1) After reading exemplars of action research designs, graduate students will design an action research proposal.

2) Graduate students will work with a group of literacy learners to implement an approved action research project.

3) Upon completion of the action research project, graduate students will write a report that merges written analysis of results and personal reflection.

4) Students will maintain an active online discourse on course topics via Blackboard.

VII. Course Objectives (ASU MSE Conceptual Framework and NCTE/IRA)

Course is aligned to the following Conceptual Framework (ASU Master of Science in Education Programs in Early Childhood Education, Middle Level, and Reading):

Strengthening Pedagogy

Strengthening Pedagogy: The master's level candidates engage in strengthening pedagogy by providing leadership in the development, implementation and evaluation of learning experiences.

The master's level candidates strengthen pedagogy by:

- Interpreting and applying appropriate theories and research which capitalize upon the developmental characteristics of all learners and supports instructional choices that will maximize student learning.
- Promoting a wide range of evidence-based instructional practices, including technology resources.

- Understanding the interdisciplinary nature of knowledge and making connections among content area curriculum and prior knowledge.
- Guiding critical dialogue of effective instructional practices which meet the varied needs of all learners.
- Mentoring other teachers through coaching techniques.
- Planning and implementing effective professional development for teachers.
- Sharing the research base, regardless of specialization, for the chosen curriculum and assessment methods.
- Promoting a student-centered, positive learning environment.

Embracing Diversity

Diversity: The master's level candidates embrace diversity by creating a positive learning environment that reflects an in-depth understanding of the structural factors that impact the lives of students.

The master's level candidates help all students learn by:

- Understanding and demonstrating sensitivity to structural factors within society that affect the learning environment such as gender, race, social class, ethnicity, ability, sexual orientation, age, and religion.
- Developing strategies that build positive and productive relationships between schools, families, and communities.
- Planning, selecting materials, and creating classroom activities that reflect an in-depth understanding of multicultural education.
- Creating a learning environment that facilitates an ongoing discourse on issues of diversity that affect a school culture in order to meet the changing needs of all children.

Reflective Decision Making

Reflective Decision Making: The Master's Level Candidates employ reflective decision making to enhance professional performance.

The Masters Level Candidates will use reflective decision making by:

- Determining the effectiveness of instructional practice through the appropriate use and selection of instructional assessments.
- Utilizing the evidence based rational for strategies used to meet the needs of all learners.

• Determining the impact of student developmental and cultural background on readiness to learning.

• Evaluating their teaching practice using current research and theory

• Demonstrating a sense of efficiency through the application of reflection to Practice

Professional Community Collaboration

The master's level candidate demonstrates a commitment to the quality of education while improving skills critical to collaborating in professional communities which include family, school, and the broader community.

The master's level candidates will model appropriate professional community collaboration by:

• Interpreting and applying appropriate theories and research needed to perform their professional roles and to keep abreast of the field's changing base.

• Demonstrating a high level of skill in identifying the human, material and technological resources necessary to be effective within their professional role.

• Understanding the influences derived from family, school, and the broader community and how these contexts affect children's learning and development.

• Interacting with families and the community to improve the lives of students.

• Demonstrating of flexible varied skills needed to work collaboratively and effectively with stakeholders in professional roles.

• Applying ethical guidelines to public policy and advocacy issues in order to promote more caring, just and equitable communities of service to students and families.

• Using abilities and opportunities to think strategically, build consensus, create change, and influence better outcomes for children, families, and the profession.

Course is aligned to the following Conceptual Framework (ASU Professional Education Advanced Programs Conceptual Framework Linkage):

1. Professional Identity: Advanced candidates demonstrate commitment through leadership and advocacy for professional practice in accordance to legal and ethical standards within a multicultural and pluralistic society.
2. Diversity: Advanced candidates demonstrate in-depth understanding of and respect for diversity and its implications for learning.

3. Advanced Knowledge and Skills: Advanced candidates demonstrate mastery of content and pedagogical knowledge and skills to apply that knowledge effectively in school settings.
4. Ecological Dimensions: Advanced candidates demonstrate understanding of influences derived from family, school, and community contexts that impact student learning and development.
5. Evidence-Based Practices: Advanced candidates apply research-based knowledge to promote optimal development of all constituents and generate data for decision-making.

Course is aligned to the following IRA 2010 Standards:

Standard 1: Foundational Knowledge

Candidates understand the theoretical and evidence-based foundations of reading and writing processes and instruction

Standard 2: Curriculum and Instruction

Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing.

Standard 3: Assessment and Evaluation

Candidates use a variety of assessment tools and practices to plan and evaluate effective reading and writing instruction.

Standard 4: Diversity

Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society.

Standard 5: Literate Environment

Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments.

Standard 6: Professional Learning and Leadership

Candidates recognize the importance of, demonstrate, and facilitate professional learning and leadership as a career-long effort and responsibility.

VIII. Course Policies and Logistics

1) This course is offered via online delivery. A variety of teaching methods may still be utilized **in this course, when possible. These will include, but are not limited to demonstrations, audio-visual material, power point presentations, group discussions/debate, collaborative learning, journal writing, and literature review activities**

2) Students are responsible for completing all work **as stated in the Course Schedule (See Section XIII and/or relevant handout).**

3) **No late work will be accepted** unless arrangements have been made in advance with the instructor or if an unexpected family or medical emergency is formally documented and brought to my attention. **Late work that is accepted due to unexcused absence** will result in a one-third letter grade deduction of points for the particular assignment for each day the assignment remains late.

4) **ASU email (PREFERRED) is the method for contacting the instructor.** Do not use any other email address besides your ASU email **to contact the instructor. Do not assume I received your email unless I have replied personally. Be proactive and don't hesitate to follow-up on communication.**

5) Publisher's Web Site: the publisher of your textbook may provide several student tools for your use. There may be practice tests, chapter objectives, web links for lesson plans, etc. I suggest you use this. Practice tests may be used as study guides. **The work on the publisher's website will not necessarily be replicated by the instructor.**

6) Plagiarism will not be tolerated. **Written assignments and test/quizzes and projects may not be copied from a student's prior work, the work of other students, from models used by the instructor, or from published material including the Internet. According to the Student Handbook, cheating and plagiarism may result in a student being asked to leave the academic community, may result in a failing grade for the course, may result in a failing grade for the assignment.**

If deemed guilty of plagiarism, Plagiarism on course work/papers/assessments will result in a grade of zero (0%) on the assignment. I will make every attempt to determine if plagiarism was intentional or unintentional and act accordingly, with resubmission options for assignments if I determine plagiarism was unintentional. Intentional plagiarism on multiple course assignments may result in an automatic "F" grade for the course.

7) **Readings, lesson models, rubrics, assignment directions, some lecture notes, and additional information will be placed on Blackboard.** The student is responsible for acquiring materials placed on Blackboard. **Try to make good use of use your library/technology fees.**

8) All written work for the course should be thoroughly proofread/revised/edited **and should use a Times New Roman style font, 12-point size, double-spaced, with one-inch margins.**

Works cited and in-text citation should consistently follow APA format **(see Course Documents on Blackboard for APA assistance). Assignments accepted via ASU email or Blackboard must be in Microsoft Word format (.doc or .docx) only. No exceptions! There may be opportunities for peer editing or peer review of written work.** Advance drafts of papers for instructor feedback prior to deadlines are encouraged and welcomed.

Papers handed in digitally will likely be returned to students in PDF format**, with visible feedback comments attached by the instructor and possibly narrative comments at the end. Remember:** a paper is not "fully" handed in digitally until I have responded to the email to which it was attached. **Material handed in via hard copy is not "fully" handed in until it is stapled and in my hands.**

9) The instructor always welcomes **student effort to revise written work to improve a grade**. If all changes/revisions to the paper are successful, this will typically result in recovery of up to half of the missed points. Revision ideas and deadline must be negotiated and agreed upon with the instructor no later than two weeks after the assignment is returned to the student. Due to the logistics of the semester, this may not be possible for assignments handed in during the final two weeks of class.

The instructor also welcomes discussion with students about disputed paper grades. This must also take place or be scheduled no later than two weeks after the assignment is returned to the student. Due to the logistics of the semester, this may not be possible for assignments handed in during the final two weeks of class.

10) **All items on this syllabus are subject to change**. Modifications in requirements, assignments, and the tentative course outline will be made as necessary with reasonable advance notice given to students in the course. Adjustments to the course schedule, including number of required meetings will be modified as necessary. *Please keep this in mind as this is a brand new course!*

11) **Always remember that the instructor is committed to your success**. Keep me posted as to your successes, struggles, questions, or comments in the course. The stronger our communication, the greater your chances of success in the course. *I believe in collegiality with graduate students and mentoring graduate student work.*

12) **Remember that you are graduate students in an advanced course.** I expect that you will fully engage with all coursework (readings, discussion, and assignments/assessment) with a professional and academic passion. Grades in a graduate course and program are **earned** and represent your attainment of a high level of theoretical knowledge and potential for professional practice. *Students will not necessarily all reach this level at the same pace. I am committed to your success in this regard.*

IX. Course Grading

Course Grading Breakdown

Participation	100
Blackboard Discussions (Approx. 18-24; points distributed proportionally)	100
Action Research: Proposal	400
Action Research: Implementation and Report	400
TOTAL POINTS	**1000**

Course Grading Scale (Note +/- does not apply to the grade for the Registrar)

A	920-1000	C	740-829
B	830-919	**F**	**0-649**

Incomplete "I" Grades

An Incomplete ("I") grade is appropriate when a student fails to meet all course requirements for reasons beyond the student's control (e.g. legitimately documented illness, bereavement, extended graduate student research). Procrastination, pressure of other courses, or work not connected with the student's school load, are not acceptable reasons for an "I" grade. All "I" grades must have prior approval of the department chair in which the course is offered, which requires the "Request for Incomplete Grade" form to be on file with the Registrar.

X. Course Online Discussion: Blackboard

Weekly coursework will take the form of online discussion/discourse on Blackboard. This is intended to increase class discourse in a different form, and offer a venue for students to directly engage with each other's thinking. It also represents a way to "synthesize and capture" knowledge.

Blackboard discussion posting will essentially involve two discussion postings each week, one a Reading Response to any/all of the assigned reading for the week, the other a Peer Response that is more personal, and more about your classmates' thinking than the course readings.

A handout will overview Blackboard posting in greater detail and further define the nature of both the Reading Response post and the Peer Response post.

XI. Action Research: Proposal

The first major component of this course will be the Action Research Proposal

This Action Research Proposal will detail a proposed study design, including a brief preliminary literature review, which will overview the methodological steps to be taken in the Action Research Project. This study design will follow a complete epistemological format, will include a firm rationale for steps taken in study design, and will describe steps to be taken to collect relevant data for analysis. The proposal will also include a brief prediction of possible results.

A handout (via Blackboard) will overview the Action Research Proposal component in greater detail and will include the relevant grading rubric.

XII. Action Research: Implementation and Report

The second aspect of this course will be the Action Research Implementation and Report (which consists of the original proposal PLUS the outcome of the study).

The Action Research Report will vary greatly from project to project. Implementation of the Action Research will be conducted independently—likely on-site at the graduate student's school of employment. For graduate students who are not in-service teachers, ample opportunity for data collection will exist, as well. The Action Research Report will accomplish two purposes: report findings, and fuel relevant reflection. The Report will detail the actual steps undertaken in the research, will describe data collected, analyze data according to relevant analysis model described in the Proposal, and state findings as they apply to literacy education.

Additionally, the Report will have opportunities for personal reflection on the process built in with the hopes of enhancing poignant personal connections to the research process. A final step in the report will be constructing a PPT Presentation (~10 minutes) for sharing study results in class on the final course meeting (with hopes of future conference presentation).

A handout (via Blackboard) will overview the Action Research Reporo component in greater detail and will include the relevant grading rubric.

XIII. Course Schedule

** Course Schedule will be available via Blackboard in addition to this Course Syllabus. Updates to Course Schedule will appear as needed and will follow the following format:*

WEEK	DAY	TOPIC	DUE (on this class meeting)
Week # *Online*	#/#	Key concepts requiring student understanding; topics central to Blackboard discussion posting; topics pertaining to major course assessments.	Course text chapters, sections, or supplemental readings. Author "And Title" are clearly indicated. **Major course assignments DUE are listed in Bold text.**

XIV. Procedures to Accommodate Students with Disabilities

The Department of Teacher Education makes reasonable accommodation for qualified students with medically documented disabilities. "Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration, and within the first two weeks of class, please contact me to discuss appropriate academic accommodations" (http://www2.astate.edu/disability or (870) 972-3964).

XV. Diversity

Diversity will be addressed in but not limited to the areas: assignments, readings, discussions and classroom activities. Additionally, strength and challenges of diversity are throughout all sections of the curriculum. Some of the literature presented and used as examples will be multicultural in nature. In addition, we will be discussing diversity in the literacy classroom and how to adapt instruction for English Language and at-risk learners. Included will be teaching strategies for the learning disabled and the economically disadvantaged students.

In this class, students will have opportunities to draw effectively on their own experiences and cultures when developing their class activities. With the Instructor serving as a model in the classroom, the students are learning to (Pathwise Domain B):

A. Create a climate that promotes fairness to all.
B. Establish and maintain the appropriate rapport with students.
C. Communicate challenging learning expectations to each student.
D. Establish and maintain consistent standards of classroom behavior.
E. Make the physical environment as safe and conducive to learning as possible.

Arkansas State University

Department of Teacher Education

Summer RDNG 7283

Writing Pedagogy: Advanced Processes of Writing

I. Course Information

A. Course: *Writing Pedagogy—Advanced Processes of Writing*

Examines varied perspectives of the processes of writing, with a focus on recursive practices in authentic, academic, and personal settings. Reflection on personal and academic writing practices and research of writing pedagogy facilitates the study of effective application.

Meeting times: Online

B. Instructor: Dr. Dixie Keyes

C. Office: Room 369

D. Phone: 501-680-8065 – Office

E. E-mail: dkeyes@astate.edu

F. Office Hours: By appointment

II. Reading

A. Primary Texts:

Murray, D. (1985*). A writer teaches writing.* Houghton Mifflin.

Schneider, P. (2003). *Writing alone and with others.* Oxford University Press.

B. Supplemental Texts (not required):

Berdan etal. (2006). *Writing for a change: Boosting literacy and learning through social action.* National Writing Project and Jossey-Bass.

Hermsen, T. (2009). *Poetry of place: Helping students writer their worlds.* NCTE.

C. Supplemental Website and Website Pages:

http://allpoetry.com/poems

http://www.ncte.org/positions/writing

http://www.nwp.org/cs/public/print/resource/3076 Linda Christensen article

http://www.nwp.org/cs/public/print/resource/3076 Writing for the Public--case study published in *English Education*

http://www.zettaelliott.com/blog/ The Blog of Zetta Elliott, scholar & author; "Disappearing into the System"

http://clayfturner.com/ Website of local author (wordpress)

http://writingteaching.edublogs.org/author/mistermayers/ Blog of local educator (edublog)

http://www.makealivingwriting.com/10-writer-websites-kick-butt-clients/ For examples of writers' blogs

Corporation of New York. **Washington, DC: Alliance for Excellent Education. Accessible at: http://www.all4ed.org/files/archive/publications/WritingNext/WritingNext.pdf**

Magrath et al. (2003). *The neglected "R": The need for a writing revolution—Report of The National Commission on Writing in America's Schools and Colleges.* The College Board. Accessible at:

http://www.collegeboard.com/prod_downloads/writingcom/neglectedr.pdf

III. Purpose of the Course

In the graduate course, Writing Pedagogy—Advanced Processes of Writing, the purposes of the course include:

1) Analyzing current schooling initiatives and reform policies related to processes of writing and writing instruction; 2) Examining the various modes and techniques of recursive writing experiences (personal and those of others); 3) Studying the theory that underlies the significance of prewriting, drafting, revision, editing and publishing experiences for teachers and learners; and 4) Rehearse writing experiences and developing oneself as a teacher and professional who writes.

For major projects and assignments, students will: 1) develop both narrative and expository writing pieces using various prewriting, revision, feedback and editing techniques; 2) compile a digital reflective portfolio that accumulates the stages of recursive writing processes; 3) develop an evidence-based learning environment for student writers and share the evidence-base which supports it ; 4) develop an annotated bibliography of relevant resources central to instructional interests and curricular leadership responsibilities; 5) analyze existing writing programs or approach to writing in their home schools and/or districts and develop a working plan for refinement of professional development in writing.

This course is aligned with current International Reading Association and NCATE-approved national literacy organization position statements and policies regarding issues in adolescent literacy. Upon successful completion of this course, graduate students will be capable of supporting children's literacy learning and leading other educators toward effective approaches to positive literacy development and engagement with a wide variety of literature and correlated modes and methods of writing.

IV. Course Objectives

A. The International Reading Association standards met by this course are: 1.1, 1.2, 1.3, 2.3, 5.1, 5.2, 5.3

FOUNDATIONAL KNOWLEDGE:

From 1.1--

- Interpret major theories of reading and writing processes and development to understand the needs of all readers in diverse contexts.
- Analyze classroom environment quality for fostering individual motivation to read and write (e.g., access to print, choice, challenge, and interests).
- Demonstrate a critical stance toward the scholarship of the profession.
- Inform other educators about major theories of reading and writing processes, components, and development with supporting research evidence, including information about the relationship between the culture and native language of English learners as a support system in their learning to read and write in English.

From 1.2—

- Interpret and summarize historically shared knowledge (e.g., instructional strategies and theories) that addresses the needs of all readers.
- Inform educators and others about the historically shared knowledge base in reading and writing and its role in reading education.

From 1.3—

- Model fair-mindedness, empathy, and ethical behavior when teaching students and working with other professionals.
- Communicate the importance of fair-mindedness, empathy, and ethical behavior in literacy instruction and professional behavior.

CURRICULUM AND INSTRUCTION:

From 2.1—

- Demonstrate an understanding of the research and literature that undergirds the reading and writing curriculum and instruction for all pre-K–12 students.
- Support teachers and other personnel in the design, implementation, and evaluation of the reading and writing curriculum for all students.
- Work with teachers and other personnel in developing a literacy curriculum that has vertical and horizontal alignment across pre-K–12.

From 2.2—

- Use instructional approaches supported by literature and research for the following areas: concepts of print, phonemic awareness, phonics, vocabulary, comprehension, fluency, critical thinking, motivation, and writing.

From 2.3—

- Demonstrate knowledge of and a critical stance toward a wide variety of quality traditional print, digital, and online resources.

- Support classroom teachers in building and using a quality, accessible classroom library and materials collection that meets the specific needs and abilities of all learners.

ASSESSMENT AND EVALUATION:

From 3.1—

- Demonstrate an understanding of the literature and research related to assessments and their uses and misuses.
- Explain district and state assessment frameworks, proficiency standards, and student benchmarks.

DIVERSITY:

From 4.1—

- Demonstrate an understanding of the ways in which diversity influences the reading and writing development of all students, especially those who struggle with reading and writing.

- Assist teachers in developing reading and writing instruction that is responsive to diversity.

From 4.2—

- Provide differentiated instruction and instructional materials, including traditional print, digital, and online resources, that capitalize on diversity.

- Support classroom teachers in providing differentiated instruction and developing students as agents of their own literacy learning.

- Support and lead other educators to recognize their own cultures in order to teach in ways that are responsive to students' diverse backgrounds.

From 4.3—

- Advocate for change in societal practices and institutional structures that are inherently biased or prejudiced against certain groups.

- Demonstrate how issues of inequity and opportunities for social justice activism and resiliency can be incorporated into the literacy curriculum.

LITERATE ENVIRONMENT:

From 5.1—

- Arrange instructional areas to provide easy access to books and other instructional materials for a variety of individual, small-group, and whole-class activities and support teachers in doing the same.

From 5.2—

- Create supportive social environments for all students, especially those who struggle with reading and writing.

- Model for and support teachers and other professionals in doing the same for all students.

From 5.3—

- Understand the role of routines in creating and maintaining positive learning environments for reading and writing instruction using traditional print, digital, and online resources.

From 5.4—

- Use evidence-based grouping practices to meet the needs of all students, especially those who struggle with reading and writing.
-

PROFESSIONAL LEARNING AND LEADERSHIP:

From 6.1—

- Use literature and research findings about adult learning, organizational change, professional development, and school culture in working with teachers and other professionals.

From 6.2—

- Promote the value of reading and writing in and out of school by modeling a positive attitude toward reading and writing with students, colleagues, administrators, and parents and guardians.

- Join and participate in professional literacy organizations, symposia, conferences, and workshops.

- Demonstrate effective interpersonal, communication, and leadership skills.

- Demonstrate effective use of technology for improving student learning.

From 6.3—

- Collaborate in, leading, and evaluating professional development activities for individuals and groups of teachers. Activities may include working individually with teachers (e.g., modeling, coplanning, coteaching, and observing) or with groups (e.g., teacher workshops, group meetings, and online learning).

- Demonstrate the ability to hold effective conversations (e.g., for planning and reflective problem solving) with individuals and groups of teachers, work collaboratively with teachers and administrators, and facilitate group meetings.

From 6.4—

- Demonstrate an understanding of local, state, and national policies that affect reading and writing instruction.

B. Department of Teacher Education Advanced Conceptual Frameworks:

"EMPOWERING TEACHERS AS LEADERS"

1. Strengthening Pedagogy: Master's Level Candidates engage in strengthening pedagogy by providing leadership in the development, implementation and evaluation of learning experiences.

The master's level candidates strengthen pedagogy by:

- **Interpreting and applying appropriate theories and research which capitalize upon the developmental characteristics of all learners and supports instructional choices that will maximize student learning.**
- **Promoting a wide range of evidence-based instructional practices, including technology resources.**
- **Understanding the interdisciplinary nature of knowledge and making connections among content area curriculum and prior knowledge.**
- **Guiding critical dialogue of effective instructional practices which meet the varied needs of all learners.**
- **Mentoring other teachers through coaching techniques.**
- **Planning and implementing effective professional development for teachers.**
- **Sharing the research base, regardless of specialization, for the chosen curriculum and assessment methods.**
- **Promoting a student-centered, positive learning environment.**

2. Embracing Diversity: The master's level candidates embrace diversity by creating a positive learning environment that reflects an in-depth understanding of the structural factors that impact the lives of students.

The master's level candidates will help all students learn by:

- **Understanding and demonstrating sensitivity to structural factors within society that affect the learning environment such as gender, race, social class, ethnicity, ability, sexual orientation, age, and religion.**
- **Developing strategies that build positive and productive relationships between schools, families, and communities.**
- **Planning, selecting materials, and creating classroom activities that reflect an in-depth understanding of multicultural education.**
- **Creating a learning environment that facilitates an ongoing discourse on issues of diversity that affect a school culture in order to meet the changing needs of all children.**

3) Reflective Decision Making**:** The Master's Level Candidates employ reflective decision making to enhance professional performance.

The Masters Level Candidate will use reflective decision making by:

- **Determining the effectiveness of instructional practice through the appropriate use and selection of instructional assessments.**
- **Utilizing the evidence based rational for strategies used to meet the needs of all learners.**
- **Determining the impact of student developmental and cultural background on readiness to learning.**
- **Evaluating their teaching practice using current research and theory**
- **Demonstrating a sense of efficiency through the application of reflection to practice**

4) Professional Community Collaboration: The master's level candidate demonstrates a commitment to the quality of education while improving skills critical to collaborating in professional communities which include family, school, and the broader community.

The master's level candidate will model appropriate professional community collaboration by:

- **Interpreting and applying appropriate theories and research needed to perform their professional roles and to keep abreast of the field's changing base.**
- **Demonstrating a high level of skill in identifying the human, material and technological resources necessary to be effective within their professional role.**
- **Understanding the influences derived from family, school, and the broader community and how these contexts affect children's learning and development.**
- **Interacting with families and the community to improve the lives of students.**

C. ISTE Linkage

1. Technology Operations and Concepts

    a. Demonstrate introductory knowledge, skills, and understanding of concepts related to technology

2. Planning and Designing Learning Environments and Experiences

    a. Design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners

    c. Identify and locate technology resources and evaluates them for accuracy and suitability

3. Productivity and Professional Practice

    a. Use technology resources to engage in ongoing professional development and lifelong learning

    c. Apply technology to increase productivity

4. Social, Ethical, Legal, and Human Issues

c. Identify and use technology resources that affirm diversity

D. PRAXIS Reading Specialist K-12 Connections (www.ets.org) :

I. Theoretical and Knowledge Bases of Reading

A. Demonstrate an understanding of the social, linguistic, and cultural influences on language and literacy learning

B. Demonstrate knowledge of experiences that support different stages of literacy development

C. Demonstrate an understanding of the relationships among reading, writing, speaking, and listening

D. Demonstrate knowledge of the role of the reader's prior knowledge, of the reader's social/cultural/linguistic background, and of the role of social interaction in constructing meaning

II. Application of Theoretical and Knowledge Bases of Reading in Instruction

A. Demonstrate an understanding of the relationship between reading and writing instruction and of how writing and reading support each other at different developmental levels

B. Demonstrate knowledge of how to construct instructional plans in which assessment, goals, instruction, and reassessment are connected and continuous

C. Demonstrate knowledge of explicit instructional strategies to teach students how to monitor their own word identification strategies, comprehension, and comprehension strategies

D. Demonstrate knowledge of instructional approaches to foster higher-order, critical, reflective thinking about text

F. Demonstrate an understanding of the instruction of comprehension strategies, including modeling when and how to orchestrate multiple comprehension strategies and their scaffolding

G. Demonstrate knowledge of explicit instruction and scaffolding for learning study skills and strategies (e.g., note taking and test taking)

H. Demonstrate an understanding of how literacy practices and needs differ across content areas (e.g., science, math, history, art)

J. Demonstrate an understanding of how to appropriately use texts (e.g., nonprint materials, media, trade books, textbooks, and electronic texts) within diverse genres for multiple purposes and life-long learning

K. Demonstrate knowledge of a variety of children's/adolescent's literature, including multicultural literature, and how to mediate it to enhance instruction

L. Demonstrate an understanding of how technology can be used to enhance instruction

M. Demonstrate an understanding of how to teach students to recursively apply strategies for planning, drafting, revising, and editing texts to different genres for a variety of purposes and audiences

N. Demonstrate an understanding of the purpose of publication of student writing in literacy acquisition

O. Demonstrate an understanding of deliberate vocabulary instruction across grades and content areas

P. Demonstrate knowledge of how to plan and implement instruction that addresses the strengths and needs of all students

Q. Demonstrate an understanding of instructional decisions to accommodate learners with social, cultural, linguistic, and cognitive differences

III. Application of Theoretical and Knowledge Bases of Reading in Diagnosis and Assessment

R. Demonstrate an understanding of the appropriate selection, use, and interpretation of formal assessment tools (e.g., norm-referenced tests, criterion-referenced tests, formal and informal inventories, on-demand direct writing) and teacher-developed assessment tools (e.g., constructed-response measurements, portfolio-based assessments, running records, miscue analysis, student self-evaluations, work/performance samples, observations, anecdotal records, journals) to report, evaluate and modify instruction for successful learning

IV. Reading Leadership

A. Demonstrate an understanding of culturally relevant curricular approaches to improve instruction

B. Demonstrate an understanding of the importance of school and community when promoting home-school connections

C. Demonstrate an understanding of how to promote positive and effective literacy connections between the home and the school

E. Primary Goals/Objectives of the Course

#1: To move teachers recursively from the practice of writing, to theories about the writing process, to the practice of teaching writing, and then to a more informed practice of writing

#2: To objectively discuss theory about writing

#3: To subjectively reflect on one's own experience based on discovered theory

V. Course Assessment and Performance Measures

A. Reflective Writing Process Digital Portfolio (recursive practices)

B. Narrative Piece

C. Expository Piece

D. Professional Piece—using poetry in content areas

E. Connections to Theory on Writing

F. Analysis of Writing Program

A. Class Participation:
All students are required to be prepared and participate in class discussions.

B. Written Assignments:
Unless otherwise directed, written assignments should be typed, double-spaced, in 12 pt Times New Roman (or equivalent) font.

C. Learning Activities/Products:

Digital Reflective Writing Portfolio

Narrative and Community pieces completed and publishable

Reading Responses and Poetry Postings

Annotated Bibliography of Sources on Writing

Professional Development Plan on Writing

Create a Blog—Professional Community Participation

Assignment	Points Worth	Date Due
Digital Reflective Writing Portfolio, to include examples of your recursive practices	100	

for two pieces of writing (powerpoint; Prezi; Vimeo;		
Narrative Piece (fiction or literary nonfiction) – finished and publishable; posted on your blog.	100	
Community Piece (any genre—informational; poetry; biography; autobiography; travel; Op-ed; feature news; letter)—finished and published or sent to appropro audience; posted on your blog.	100	
Reading responses *(on our class blog)* and AllPoetry.com postings *(from poetic responses to WRITING ALONE and WITH OTHERS)*	50 50 (100 total)	
Annotated Bibliography of Sources on Writing (20 items)	100	
Professional Development Plan on Writing for Colleagues/Peers *(customized for your setting or workplace)*	100	
Professional Community Participation—writing groups (Google Docs, on your blog)	100	
	700 points	

Grading Scale	
Letter	*Percentage*
A	92 – 100
B	84 – 91
C	75 – 83
D	66 – 74

F	65 ↓

VI. Course Topics (order may vary)

1: Reading/Writing Workshop—How to acknowledge and encourage recursivity

2: Mini-lessons for all portions of the writing process

3: Writing a Narrative—prewriting, revision, editing and publishing experiences

4: Writing an Expository piece—prewriting, revision, editing and publishing experiences; transitioning from a narrative

5: Writing a Professional Piece—prewriting, revision, editing and publishing experiences; transitioning from an expository piece or from reflective experiences

6: Poetry—modes of free verse; examination of personal processes; editing for meaning and descriptive elegance; using poetry to explore and synthesize meaning from content areas

7: Reading/Writing Workshop Experiences: records of learning & reading—noting grammar learning, teacher to student and student to student conferences, clocking, journeys in revision

8: Embracing Publication—development of anthologies in print and online

9: Valuing the individual identity of student writers—taking them home and then to writing

10: Blended Genres of writing

11: Developing Writing Groups

12: Issues in Assessment of Writing and meeting state standards

VII. Special Considerations and/or Features of the Course

A. Students enrolling in this course must be admitted to ASU graduate school; this course is part of the Arkansas Delta Writing Project and participation depends upon acceptance into the Summer Writing Institute for Teachers.

B. The student is responsible for all assigned readings, including power-point presentations, handouts and journal articles. Copies will be made for you for your demonstration lesson.

C. Written assignments should not be copied from papers of others students, from the models used by the instructor, or from published materials. According to the Student Handbook, cheating and plagiarism may result in a student being asked to leave the academic community. *Please document sources used for lesson plans, including Internet Sites.*

D. Students should use appropriate technology when completing projects.

E. The aforementioned requirements, assignments, policies, etc. are subject to change. Students' experiences and needs will be considered when modifying the course syllabus.

F. Students are responsible for reading during reading time and writing during writing time.

VIII. Procedures to Accommodate Students with Disabilities

Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services (870-972-3964). Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodations. Appropriate arrangements can be made to ensure equal access to this course.

If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please make an appointment to see me as soon as possible.

IX. References

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Lane, B (2008). *But how do you teach writing? A simple guide for all teachers.* Scholastic: New York.

Murray, D. (1985). *A writer teaches writing*. Boston, MA: Houghton Mifflin.

Murray, D. (1987). *Write to learn*. Ft. Worth: Holt Rinehart.

Newkirk, T. & Atwell, N, Eds. (1988). *Understanding writing: Ways of observing, learning and teaching*. Portsmouth, NH: Heinemann.

Peterson, A. (1996). *The writer's workout book: 113 stretches toward better prose.* NWP.

Rief, L. (1991). *Seeking diversity: Language arts with adolescents.* Portsmouth, New Hampshire: Heinemann.

Winter, E. & Robbins, S., Eds. (2005). *Writing our communities: Local learning and public culture.* NCTE and NWP.

RDNG 7393

Literacy Leaders as Community Advocates

I. Instructor Information

Dr. Ryan R. Kelly, Associate Professor of Reading

Arkansas State University, School of Teacher Education and Leadership College of Education and Behavioral Science

Office Location: Education/Communication Building, Room 374 Office Hours: Summer I (By Appointment); Please email

Direct Line: (870) 680-8445 Email: rkelly@astate.edu (Preferred) Main Office: (870) 972-3059 Fax: (870) 972-3344

Required:

II. Course Texts and Resources

1. McAndrew, D. A. (2005). Literacy leadership: Six strategies for peoplework. Barksdale, Delaware: International Reading Association.

2. *Additional Weekly Readings in PDF Form or URL*

(Available via Blackboard)

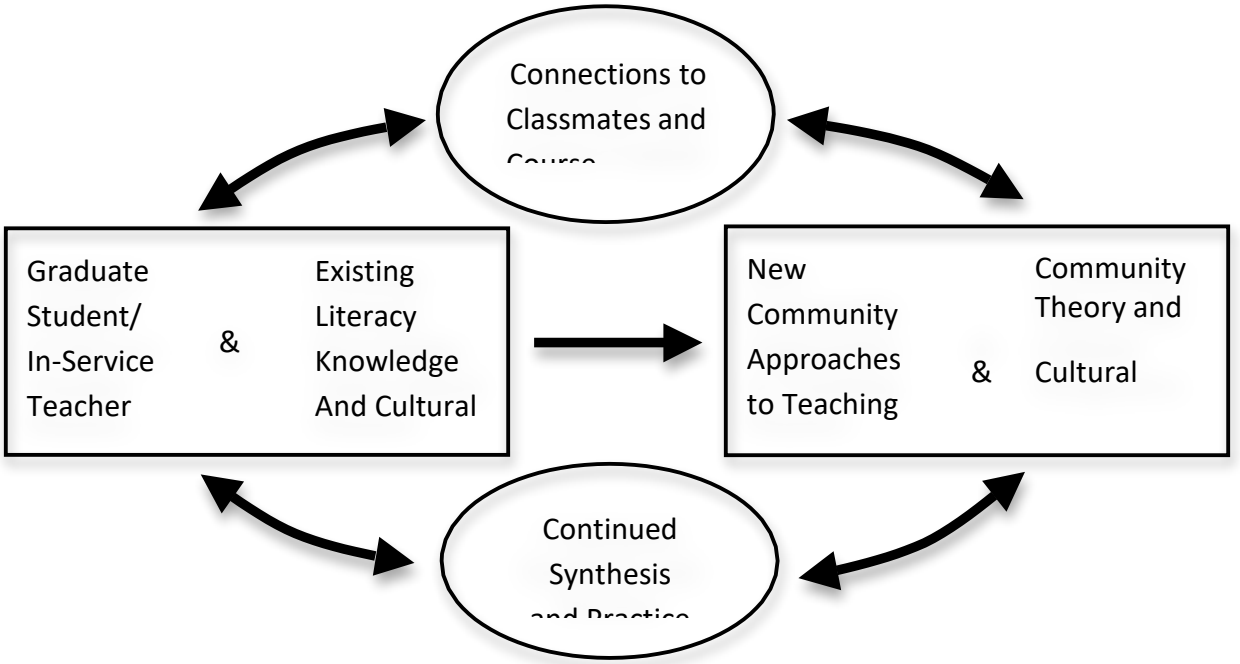
Note: These readings are subject to change, continued engagement; student contribution is welcome and encouraged.

III. Purpose or Goals of the Course

Catalog description: Examines the role of literacy leaders within the school, community, and family context. Explores literacy advocacy project development, implementation, and evaluation.

- Exploration of possible funding options in support of community literacy leadership
- Practice in semi-ethnographic field notes/memos in support of synthesized understanding of community literacy sites
- Collaborative analysis of community literacy services and synthesis or proposal of continued services

IV. Course Conceptual Model



V. Major Course Goals

1 Primary Course Goal: This course will explore community literacy services and explore relevant theory and approaches toward continued work as literacy leaders within the community.

2. The student will know what federal, state, and local resources are available for literacy leaders.

3. The student will propose a topic or project targeting school, community, or family stakeholders.

4. The student will evaluate and report on the proposed effectiveness of a collaborative literacy project.

VI. Course Instructional Objectives

1) Students will research and create a report of federal, state, and/or local resources for literacy leaders.

2) Students will work collaboratively with school, community, and/or family stakeholders to develop and implement (or propose) a literacy project designed to promote literacy.

3) Students will create an evaluation summary to report the effectiveness of a collaborative literacy project (or make prediction of outcome).

VII. Course Linkage/Alignment (ASU MSE Conceptual Framework and NCTE/IRA)

Course is aligned to the following Conceptual Framework (ASU Professional Education Advanced Programs Conceptual Framework—Strengthening and Enriching Learning):

Professional Identity: Advanced candidates demonstrate commitment through leadership and advocacy for professional practice in accordance to legal and ethical standards within a multicultural and pluralistic society.

Knowledge

- Understands ethical and legal standards.
- Understands the importance of and strategies for effective advocacy on behalf of the profession.

Skills

- Demonstrates competence in applying knowledge of content and research in professional practice.
- Promotes and applies ethical and legal standards in decision-making.
- Demonstrates professionalism in use of digital media.

Professional Dispositions

- Values the importance of professional organizations, credentialing standards, and legal and ethical standards as indicators of one's professional identity.
- Demonstrates self-efficacy by effectively reflecting on professional practice.

Diversity: Advanced candidates demonstrate in-depth understanding of and respect for diversity and its implications for learning.

Knowledge

- Understands societal factors such as gender, race, social class, ethnicity, ability, sexual orientation, age, and religion that impact student learning.

Skills

- Plans and creates experiences that help all students learn.

- Demonstrates ability to build collaborative relationships among schools, families, and communities.
- Demonstrates acceptance and respect for persons with diverse ideas, values, and behavioral practices.

Professional Dispositions

- Values and respects individuals and their differences.
- Believes all students can learn.

Advanced Knowledge and Skills: Advanced candidates demonstrate mastery of content and pedagogical knowledge and skills to apply that knowledge effectively in school settings.

Knowledge

- Knows content and concepts of the discipline at an advanced level.
- Understands the interdisciplinary nature of content and pedagogical knowledge.

Skills

- Demonstrates knowledge through inquiry, critical analysis, and synthesis of discipline-specific content.
- Shares content in challenging, clear, and compelling ways using real world contexts and integrating appropriate technologies.
- Selects and develops strategies and technologies, based on research and experience, to help all students learn.
- Reflects to enhance professional practice.

Professional Dispositions

- Values caring and supportive learning environments that encourage self-direction by all students.
- Values life-long learning and **mastery of content and pedagogical knowledge.**

Ecological Dimensions: Advanced candidates demonstrate understanding of influences derived from family, school, and community contexts that impact student learning and development.

Knowledge

- Understands the complexities of social systems that impact student learning.

Skills

- Demonstrates a high level of skill in identifying the human, material and technological resources necessary to be effective within their professional role.
- Demonstrates understanding of developmentally appropriate individual, family, and group strategies for working with diverse populations.

Professional Dispositions

- Values the intertwining role of family, community, and schools and their impact on student learning.
- Appreciates the uniqueness and worth of each student while recognizing the necessity for interdependent functioning and fairness to promote living together within the common society.

Evidence-Based Practices: Advanced candidates apply research-based knowledge to promote optimal development of all constituents and generate data for decision-making.

Knowledge

- Understands the relevance of research findings and performance data.

Skills

- Collects and analyzes student assessment data and makes data-driven decisions to improve student learning.
- Demonstrates ability to apply research methods and statistical techniques to improve professional practice.
- Demonstrates ability to interpret and apply research findings from professional literature.

Professional Dispositions

- Appreciates the importance of evidence-based practice.

Course is aligned to the following IRA 2010 Standards and Elements:

Standard 1: Foundational Knowledge

Reading Specialist/Literacy Coach Candidates understand the theoretical and evidence-based foundations of reading and writing processes and instruction.

Elements:

1.1: Understand major theories and empirical research that describe the cognitive, linguistic, motivational, and sociocultural foundations of reading and writing development, processes, and components, including word recognition, language comprehension, strategic knowledge, and reading–writing connections.

1.2: Understand the historically shared knowledge of the profession and changes over time in the perceptions of reading and writing development, processes, and components.

1.3: Understand the role of professional judgment and practical knowledge for improving all students' reading development and achievement.

Standard 2: Curriculum and Instruction

Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing.

Elements:

2.1: Use foundational knowledge to design or implement an integrated, comprehensive, and balanced curriculum. [Reading specialists may have responsibilities for teaching students who struggle with learning to read and must also be able to support teachers in their efforts to provide effective instruction for all students.]

2.2: Use appropriate and varied instructional approaches, including those that develop word recognition, language comprehension, strategic knowledge, and reading–writing connections. 2.3: Use a wide range of texts (e.g., narrative, expository, and poetry) from traditional print, digital, and online resources.

Standard 3: Assessment and Evaluation

Candidates use a variety of assessment tools and practices to plan and evaluate effective reading and writing instruction.

Elements:

3.1: Understand types of assessments and their purposes, strengths, and limitations.

3.2: Select, develop, administer, and interpret assessments, both traditional print and electronic, for specific purposes. [Reading specialists may have responsibilities for teaching students who struggle with learning to read and must also be able to support teachers in their efforts to provide effective instruction for all students.]

3.3: Use assessment information to plan and evaluate instruction.

3.4: Communicate assessment results and implications to a variety of audiences.

Standard 4: Diversity

Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society.

Elements:

4.1: Recognize, understand, and value the forms of diversity that exist in society and their importance in learning to read and write. [Reading specialists may have responsibilities for teaching students who struggle

with learning to read and must also be able to support teachers in their efforts to provide effective instruction for all students.]

4.2: Use a literacy curriculum and engage in instructional practices that positively impact students' knowledge, beliefs, and engagement with the features of diversity.

4.3: Develop and implement strategies to advocate for equity.

Standard 5: Literate Environment

Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments.

Elements:

5.1: Design the physical environment to optimize students' use of traditional print, digital, and online resources in reading and writing instruction.

5.2: Design a social environment that is low risk and includes choice, motivation, and scaffolded support to optimize students' opportunities for learning to read and write. [Reading specialists may have responsibilities for teaching students who struggle with learning to read and must also be able to support teachers in their efforts to provide effective instruction for all students.]

5.3: Use routines to support reading and writing instruction (e.g., time allocation, transitions from one activity to another; discussions, and peer feedback).

5.4: Use a variety of classroom configurations (i.e., whole class, small group, and individual) to differentiate instruction

Standard 6: Professional Learning and Leadership

Candidates recognize the importance of, demonstrate, and facilitate professional learning and leadership as a career-long effort and responsibility.

Elements:

6.1: Demonstrate foundational knowledge of adult learning theories and related research about organizational change, professional development, and school culture.

6.2: Display positive dispositions related to their own reading and writing and the teaching of reading and writing, and pursue the development of individual professional knowledge and behaviors. [This element deals with positive attitudes not only with colleagues but also with community members, parents and guardians, and so forth.]

6.3: Participate in, design, facilitate, lead, and evaluate effective and differentiated professional development programs.

6.4: Understand and influence local, state, or national policy decisions.

VIII. Course Policies and Logistics

1) **A variety of teaching methods may still be utilized** in this course, when possible. These will include, but are not limited to lecture, demonstrations, audio-visual material, power point presentations, group discussions/debate, collaborative learning, journal writing, literature reviews, and small group activities

2) Each student is expected to **bring all course materials and supplies** (textbook and/or articles, binder, note-taking material, etc.) to **any required** class meeting. Please do not leave any course text or your course notes/handouts at home.

3) **Students are responsible for completing all work** as stated in the Course Schedule (See Section XV).

4) **Full attendance and participation is *required***. Final course grade will be impacted by a one-third letter step for each absence from a required meeting without advance arrangement. Attendance and participation, due to the limited number of course meetings, is critical. **Any absences from required course meetings will NOT be excused without legitimate, formal documentation of a family or medical emergency.**

5) **No late work will be accepted** unless arrangements have been made in advance with the instructor or if an unexpected family or medical emergency is formally documented and brought to my attention. **Late work will not be accepted due to unexcused absence**.

6) ASU email (PREFERRED) for contacting the instructor. **Do not use any other email address besides your ASU email** to contact the instructor. Do not assume I received your email unless I have replied personally. Be proactive and don't hesitate to follow-up on communication.

7) **Cell phones and other messaging devices should be turned off and stay off** during required class meetings. I don't mind if you use laptops for notes or digital texts; however, if you misuse them, that privilege will be taken away.

8) Please **do not bring children or other uninvited guests to class**. Only the instructor may invite a guest to class. *NO EXCEPTIONS.*

9) Publisher's Web Site: the publisher of your textbook may provide several student tools for your use. There may be practice tests, chapter objectives, web links for lesson plans, etc. I suggest you use this. Practice tests may be used as study guides. **The work on the publisher's website will not necessarily be replicated by the instructor.**

10) **Plagiarism will not be tolerated.** Written assignments and test/quizzes and projects may not be copied from a student's prior work, the work of other students, from models used by the instructor, or from published material including the Internet. According to the Student Handbook, cheating and plagiarism may result in a student being asked to leave the academic community, may result in a failing grade for the course, may result in a failing grade for the assignment.

If deemed guilty of plagiarism, Plagiarism on course work/papers/assessments will result in a grade of zero (0%) on the assignment. I will make every attempt to determine if plagiarism was intentional or unintentional and act accordingly, with resubmission options for assignments if I determine plagiarism was unintentional. Intentional plagiarism on multiple course assignments may result in an automatic "F" grade for the course.

11) Various course materials may be placed on Blackboard Learn. **The student is responsible for acquiring materials placed on Blackboard.** Try to make good use of use your library/technology fees.

12) **All written work for the course should be thoroughly proofread/revised/edited** and should use a Times New Roman style font, 12-point size, double-spaced, with one-inch margins.

Works cited and in-text citation **should consistently follow APA format** (see Course Documents on Blackboard for APA assistance). Assignments accepted via ASU email or Blackboard must be in Microsoft Word format (.doc or .docx) only. No exceptions!

There may be opportunities for peer editing or peer review of written work. **Advance drafts of papers for instructor feedback prior to deadlines are encouraged and welcomed.**

Papers handed in digitally will likely be returned to students in Word or PDF format, with visible feedback comments attached by the instructor and possibly narrative comments at the end. Remember: **a paper is not "fully" handed in digitally until I have responded to the email to which it was attached.** Material handed in via hard copy is not "fully" handed in until it is stapled and in my hands.

13) The instructor always welcomes **student effort to revise written work to improve a grade**. If all changes/revisions to the paper are successful, this will typically result in recovery of up to half of the missed points. Revision ideas and deadline must be negotiated and agreed upon with the instructor no later than two weeks after the assignment is returned to the student. Due to the logistics of the semester, this may not be possible for assignments handed in during the final two weeks of class.

The instructor also welcomes discussion with students about disputed paper grades. This must also take place or be scheduled no later than two weeks after the assignment is returned to the student. Due to the logistics of the semester, this may not be possible for assignments handed in during the final two weeks of class.

14) **I am committed to your safety in inclement weather**. Class will only be cancelled officially if the university publicizes an official closing. Commuting students should use good judgment to determine if they should drive to campus. **If a student decides not to come to campus due to publicized inclement weather,** it is the student's responsibility to contact the instructor ahead of time to arrange the absence.

15) **All items on this syllabus are subject to change**. Modifications in requirements, assignments, and the tentative course outline will be made as necessary with reasonable advance notice given to

students in the course. Adjustments to the course schedule are typically made available on Blackboard.

16) **Always remember that the instructor is committed to your success**. Keep me posted as to your successes, struggles, questions, or comments in the course. The stronger our communication, the greater your chances of success in the course. **We are colleagues!**

17) **Remember that you are graduate students in an advanced, post-Master's course.** I expect that you will fully engage with all coursework (readings, discussion, and assignments/assessment) with a professional and academic passion. Grades in a graduate course and program are **earned** and represent your attainment of an intense level of theoretical knowledge and potential for professional practice. Students will not necessarily all reach this level at the same pace. I am committed to your success in this regard and will assist each of you as best I can in successfully completing the course.

IX. Course Grading

Course Grading Breakdown

Attendance/Participation 100

Blackboard Discussions (6.25 per Post) 100

Three Raw Field Memos (via your BB Forum; 100 per Memo) 300

Synthesized Report of Community Literacy and Community Literacy Proposal 500

TOTAL POINTS 1000

Course Grading Scale (Note +/- does not apply to the grade for the Registrar)

A	920-1000	B	830-919
C	740-829	**F**	**0-739**

Incomplete "I" Grades

An Incomplete ("I") grade is appropriate when a student fails to meet all course requirements for reasons beyond the student's control (e.g. legitimately documented illness, bereavement, extended graduate student research). Procrastination, pressure of

other courses, or work not connected with the student's school load, are not acceptable reasons for an "I" grade. All "I" grades must have prior approval of the department chair in which the course is offered, which requires the "Request for Incomplete Grade" form to be on file with the Registrar.

X. Course Online Discussion via Blackboard

Weekly coursework will take the form of online discussion/discourse on Blackboard. This is intended to increase class discourse in a different form, and offer a venue for students to directly engage with each other's thinking. It also represents a way to "synthesize and capture" knowledge. *These responses must be substantial.*

Blackboard discussion posting will essentially involve two discussion postings each week, one a Reading Response to any/all of the assigned reading for the week, the other a Peer Response that is more personal, and more about your classmates' thinking than the course readings.

A handout will overview Blackboard posting in greater detail and further define the nature of both the Reading Response post and the Peer Response post.

XI. Raw Field Memos

Students in this course will complete A MINIMUM OF THREE field journaling/memos at community sites immediately following visits to sites (or via phone contact and website examination). These field journals/memos will be qualitative, semi-ethnographic in nature, and will represent the student's effort to both capture relevant observation and information, and grow as a researcher.

Field journaling/memos will be crucial in that they will represent student effort to research literacy service on the community level and will serve as the raw material for the Synthesized Report assignment. Field journaling/memos may be analyzed collaboratively in class.

Field journaling/memos will be handed in publically via a custom forum for each student on Blackboard.

Additional materials (via Blackboard) will model and support this activity.

XII. Synthesized Report of Community Literacy and Literacy Proposal

This synthesized product (highly conceptualized in a summer term) will represent effort by the student to analyze the community literacy services they investigated and propose/design relevant literacy service in the community that fills a need identified within the synthesized report.

Made possible by visits to sites (or phone contact and website examination) and their relevant journaling/memos, this project synthesis represents the early stages of proposal development that would eventually be suitable for further development as a grant proposal.

A template (via Blackboard) will overview the Synthesized Report of Community Literacy and Literacy Proposal requirements in greater detail.

XIII. Course Schedule

** Course Schedule will be available via Blackboard in addition to this Course Syllabus. Updates to Course Schedule will appear as needed and will follow the following format:*

WEEK	DAY	TOPIC	DUE (on this class meeting)
Week # *Online*	#/#	Key concepts requiring student understanding; topics central to Blackboard discussion posting; topics pertaining to major course assessments.	Course text chapters, sections, or supplemental readings. Author "And Title" are clearly indicated.

XIV. Procedures to Accommodate Students with Disabilities

The Department of Teacher Education makes reasonable accommodation for qualified students with medically documented disabilities. "Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration, and within the first two weeks of class, please contact me to discuss appropriate academic accommodations" (http://www2.astate.edu/disability or (870) 972-3964).

XV. Diversity

Diversity will be addressed in but not limited to the areas: assignments, readings, discussions and classroom activities. Additionally, strength and challenges of diversity are throughout all sections of the curriculum.

In this class, students will have opportunities to draw effectively on their own experiences and cultures when developing their class activities. With the Instructor serving as a model in the classroom, the students are learning to:

A. Create a climate that promotes fairness to all.

B. Establish and maintain the appropriate rapport with students.

C. Communicate challenging learning expectations to each student.

D. Establish and maintain consistent standards of classroom behavior.

E. Make the physical environment as safe and conducive to learning as possible.

Arkansas State University
College of Education
Department of Teacher Education
RDNG 7423: Studies in Critical Literacy
This course is delivered completely online.

A. Required Primary Texts:

Holly, S. (2011). *Culturally and linguistically responsive teaching and learning*. Huntington Beach, CA: Shell Education.

Janks, H., Dixon, K., Ferreira, A., Granville, S., & Newfield, D. (2013). *Doing critical literacy: Texts and activities for students and teachers*. London, England: Routledge.

Articles and other assigned readings for the course that will be posted on Blackboard

B. Supplemental Text:

APA Manual, 6th edition. Recommended.

C. Software:

Microsoft Office. Free to ASU students at http://www.astate.edu/a/its/software-downloads/

Course Description: Explores literacy as a critical social practice that may be used to enact social change within the classroom and beyond. Applications include the social context of literacy; multiple literacies; and the role of literacy in production of power.

Major Course Objectives

Candidates will:
analyze theories of critical literacy pedagogy.
examine the tenets of critical literacy as a social practice.
analyze the value of critical literacy for social action.
analyze bias in children's books through critical literacy.
examine the value of multiple literacies.
examine one's own biases and how they influence literacy instruction.

Program Outcomes

Although this course addresses content for ILA Standard 4, there is not program-level assessment for this course. The program-level assessment for ILA standard 4 is addressed within another course.

Course Outcomes

Outcome 1	Candidates will recognize key principles of critical literacy in order to incorporate them into reading and writing instruction.
Which learning activities are responsible for this outcome?	The candidates will complete reading journal entries that require them to explain the principles of critical literacy and give examples of how critical literacy strategies have been incorporated into reading and/or writing lessons.
Assessment Measure	Reading journal entries submitted for scoring at the beginning and during the middle of the course.
Outcome 2	Candidates will develop understandings of the tenets critical literacy pedagogies.
Which learning activities are responsible for this outcome?	The candidates will complete reading journal entries that require them to summarize their understandings of critical literacy pedagogies.
Assessment Measure	Reading journal entries submitted for scoring at the beginning and during the middle of the course.
Outcome 3	Candidates will analyze and reflect on the relationship between instructional practices and personal biases.
Which learning activities are responsible for this outcome?	The candidates will participate in discussion boards where the instructor has provided prompts to promote discussion of and reflection on instructional practices and personal biases through the lens of critical literacy.
Assessment Measure	Discussion Boards will be submitted for scoring at the beginning and during the middle of the course.
Outcome 4	Candidates will develop recommendations for incorporating critical literacy into classroom practice.
Which learning activities are responsible for this outcome?	The candidates will complete a reflective essay that require them to provide implications of critical literacy for classroom practice and recommendations for decreasing bias within the classroom setting.
Assessment Measure	The reflective essay will be submitted for scoring at the end of the course.

This course supports the International Literacy Association (ILA) 2010 Standards:

Standard 1: Foundational Knowledge

Candidates understand the theoretical and evidence-based foundations of reading

and writing processes and instruction

Element 1.1: *Candidates understand major theories and empirical research that describe the cognitive, linguistic, motivational, and sociocultural foundations of reading and writing development, processes, and components, including word recognition, language comprehension, strategic knowledge, and reading–writing connections.*

Element 1.2: *Candidates understand the historically shared knowledge of the profession and changes over time in the perceptions of reading and writing development, processes, and components.*

Element 1.3: *Candidates understand the role of professional judgment and practical knowledge for improving all students' reading development and achievement.*

Standard 2: Curriculum and Instruction

Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing.

Element 2.1: *Candidates use foundational knowledge to design or implement an integrated, comprehensive, and balanced curriculum.*

Element 2.2: *Candidates use appropriate and varied instructional approaches, including those that develop word recognition, language comprehension, strategic knowledge, and reading–writing connections.*

Element 2.3: *Candidates use a wide range of texts (e.g., narrative, expository, and poetry) from traditional print, digital, and online resources.*

Standard 3: Assessment and Evaluation

Candidates use a variety of assessment tools and practices to plan and evaluate effective reading and writing instruction.

Element 3.1: *Candidates understand types of assessments and their purposes, strengths, and limitations.*

Element 3.2: *Candidates select, develop, administer, and interpret assessments, both traditional print and electronic, for specific purposes.*

Element 3.3: *Candidates use assessment information to plan and evaluate instruction.* **Element 3.4:** *Candidates communicate assessment results and implications to a variety of audiences.*

Standard 4: Diversity

Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society.

Standard 5: Literate Environment

Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments.

Element 3.1: *Candidates design the physical environment to optimize students' use of traditional print, digital, and online resources in reading and writing instruction.*
Element 3.2: *Candidates design a social environment that is low risk and includes choice, motivation, and scaffolded support to optimize students' opportunities for learning to read and write.*
Element 3.3: *Candidates use routines to support reading and writing instruction (e.g., time allocation, transitions from one activity to another; discussions, and peer feedback).* **Element 3.4:** *Candidates use a variety of classroom configurations (i.e., whole class, small group, and individual) to differentiate instruction.*

Standard 6: Professional Learning and Leadership
Candidates recognize the importance of, demonstrate, and facilitate professional learning and leadership as a career-long effort and responsibility.

Element 6.2: *Candidates display positive dispositions related to their own reading and writing and the teaching of reading and writing, and pursue the development of individual professional knowledge and behaviors.*

Element 6.3: *Candidates participate in, design, facilitate, lead, and evaluate effective and differentiated professional development programs.*

Course Outline

Week 1: Redefining Literacy- critical literacy pedagogy theories; defining critical literacy
Week 2: Why Critical Literacy is Necessary- Dynamic texts; texts as tools of identity formation; the mediation of identity and culture through texts
Week 3: Language and position
Week 4: Identity and Diversity
Week 5: Language and Language Varieties
Week 6: Grammar as a resource for critical literacy
Week 7: Critical visual literacy
Week 8: time, space, and bodies
Week 9: Everyday texts; analysis of books and their critical implications
Week 10: From critical awareness to social action
Week 11: Becoming Critically Aware
Week 12: Teaching Critical Literacy
Week 13: Applications of Critical Literacy as Inquiry
Week 14: Final Exam: Reflective Essay

Course Policies and Logistics

1) **Candidates are expected to complete Blackboard discussion** posts in the following manner: **initial discussion posts** due on **Thursdays** by 11:59 pm; **responses to peers** due on **Sundays** by 11:59 pm.

2) **Candidates are responsible for completing all work** as stated in this syllabus.

3) It is the candidate's responsibility to maintain safe/efficient saving of files and their work. **Due to recent abuse and over extension of flexibility due to computer difficulties,** candidates are advised to take the following steps: ***1) back up all files related to this course on a second computer location (e.g. personal laptop + home/desktop or work computer); 2) utilize an external hard drive in addition to computer backup; 3) utilize an additional USB stick/jump drive, in addition to computer and external hard drive backups; 4) save all files on some type of "cloud" or at the very least, attached to saved emails within you're A-State email account.***

4) Except in cases of **serious** extenuating circumstances, tardy work will not be accepted. The course professor will determine if the excuse for late work rises to the level of being a "serious extenuating circumstance." Procrastination, pressure of work in other courses, and work not connected with the course are not considered emergency situations. Personal computer and connection issues do not constitute an emergency. This is an online course; plan ahead and anticipate an alternative to primary computer and internet connection in the event of unexpected computer or internet problems.

5) **Do not use any other email address besides you're A-State email** to contact the instructor. *Do not assume I received your email unless you have received a reply.*

6) **All formal work for the course should be** 12-point sized font, double-spaced, with one- inch margins.

7) References and in-text citation **should consistently follow APA 6th edition format**.

8) **Assignments must be in Microsoft Word format (.doc or .docx) only.** ***No exceptions!***

9) Except in cases of **serious** extenuating circumstances, tardy work will not be accepted. The course professor will determine if the excuse for late work rises to the level of being a "serious extenuating circumstance." Procrastination, pressure of work in other courses, and personal responsibilities not connected with this course are not considered emergency situations. Additionally, personal computer and connection issues do not constitute an emergency. Because this is an online course, plan ahead and prepare alternatives to your primary computer and internet connection in the event of unexpected computer or internet problems.

10) Authorship & FERPA **apply to all assignments submitted in this course.** By submitting assignments to my instructor, I affirm that all the information I submit is my work unless otherwise referenced. For confidentiality purposes, the names of all referents (especially minors) have been changed or deleted. I understand that any evidence of plagiarism will be immediately investigated at the college and university levels and may result in adverse consequences.

11) Flexibility Clause: This syllabus is subject to change. However, you will be notified of any changes that occur prior to any due date for assignments.

Course Grading

A	92-100	C	74-82
B	83-92	**F**	**0-73**

Procedures to Accommodate Students with Disabilities

If you need course adaptations or accommodations because of a disability, have emergency medical information to share, or need special arrangements, please notify the professor ASAP and/or the A-State Officer of Disabilities http://www2.astate.edu/disability/ 870-972-3964.

Inclement Weather Policy

The University's Inclement Weather Policy if found in the Student Handbook: The university remains open for academic classes and all other services during inclement weather except in extreme circumstances determined solely by the Chancellor of the University. Regional and local news media will publicize the closing. Commuter students are encouraged to use good judgment in deciding whether to drive to campus during inclement weather. In those cases where the decision is made not to travel to campus under this policy, it is the responsibility of the student to immediately contact each of his/her professors upon return to explain the circumstances and to determine the need to complete any missed assignments. The student is responsible for all missed assignments during inclement weather within a time frame to be determined by the professor.

Academic Misconduct Policy:

The entire ASU's Academic Integrity Policy is in the Student Handbook at http://www.astate.edu/a/student-conduct/student-standards/handbook-home.dot]

Arkansas State University
Department of Teacher Education
Spring
RDNG 7473
Theories of Language Acquisition

I Course and Instructor Information

Course: RDNG 7473 Theories of Language Acquisition (CRN: 11559)
Instructor: Kwangok Song, Ph.D.
Office: ECB344
Contact Information: 870-680-8560; ksong@astate.edu
Time: Online
Location: Online
Office Hours: TBA or By Appointment

II. Course Texts and Resources

Cazden, C. B. (2001). *Classroom discourse: The language of teaching and learning* (2nd ed.). Portmouth, NH: Heinemann.

Freeman, D. E., & Freeman, Y. S. (2011). *Between worlds: Access to second language acquisition.* Portsmouth, NH: Heinemann.

Other readings will be posted on Blackboard.

V. Major Course Goals

As a result of this course, candidates will:

1) Understand first and second language and literacy acquisition theories;
2) Understand development patterns in language and literacy acquisition
3) Understand developmentally appropriate instructional approaches
4) Understand differences in children's language and literacy development
5) Understand the influence sociocultural contexts on children's language and literacy development

VI. Course Instructional Objectives

Candidates will:

1) Engage in reading theoretical and research-based articles
2) Participate in synchronous and asynchronous online discussions
3) complete assignments designed to facilitate an understanding of language acquisition theories and literacy development;

VII. Course Objectives (ASU Frameworks Linkage and NCTE/IRA)

Course is aligned to the following standards:

Arkansas State University
Advanced Programs Conceptual Framework
Strengthening and Enriching Learning

Central Elements
Candidate Knowledge, Skills, and Dispositions

Professional Identity: Advanced candidates demonstrate commitment through leadership and advocacy for professional practice in accordance to legal and ethical standards within a multicultural and pluralistic society.

Knowledge
- Understands ethical and legal standards.
- Understands the importance of and strategies for effective advocacy on behalf of the profession.

Skills
- Demonstrates competence in applying knowledge of content and research in professional practice.
- Promotes and applies ethical and legal standards in decision-making.
- Demonstrates professionalism in use of digital media.

Professional Dispositions
- Values the importance of professional organizations, credentialing standards, and legal and ethical standards as indicators of one's professional identity.
- Demonstrates self-efficacy by effectively reflecting on professional practice.

Diversity: Advanced candidates demonstrate in-depth understanding of and respect for diversity and its implications for learning.

Knowledge
- Understands societal factors such as gender, race, social class, ethnicity, ability, sexual orientation, age, and religion that impact student learning.

Skills
- Plans and creates experiences that help all students learn.
- Demonstrates ability to build collaborative relationships among schools, families, and communities.
- Demonstrates acceptance and respect for persons with diverse ideas, values, and behavioral practices.

Professional Dispositions

- Values and respects individuals and their differences.
- Believes all students can learn.

Advanced Knowledge and Skills: Advanced candidates demonstrate mastery of content and pedagogical knowledge and skills to apply that knowledge effectively in school settings.

Knowledge

- Knows content and concepts of the discipline at an advanced level.
- Understands the interdisciplinary nature of content and pedagogical knowledge.

Skills

- Demonstrates knowledge through inquiry, critical analysis, and synthesis of discipline-specific content.
- Shares content in challenging, clear, and compelling ways using real world contexts and integrating appropriate technologies.
- Selects and develops strategies and technologies, based on research and experience, to help all students learn.
- Reflects to enhance professional practice.

Professional Dispositions

- Values caring and supportive learning environments that encourage self-direction by all students.
- Values life-long learning and mastery of content and pedagogical knowledge.

Ecological Dimensions: Advanced candidates demonstrate understanding of influences derived from family, school, and community contexts that impact student learning and development.

Knowledge

- Understands the complexities of social systems that impact student learning.

Skills

- Demonstrates a high level of skill in identifying the human, material and technological resources necessary to be effective within their professional role.
- Demonstrates understanding of developmentally appropriate individual, family, and group strategies for working with diverse populations.

Professional Dispositions

- Values the intertwining role of family, community, and schools and their impact on student learning.
- Appreciates the uniqueness and worth of each student while recognizing the necessity for interdependent functioning and fairness to promote living together within the common society.

Evidence-Based Practices: Advanced candidates apply research-based knowledge to promote optimal development of all constituents and generate data for decision-making.

Knowledge

- Understands the relevance of research findings and performance data.

Skills

- Collects and analyzes student assessment data and makes data-driven decisions to improve student learning.
- Demonstrates ability to apply research methods and statistical techniques to improve professional practice.
- Demonstrates ability to interpret and apply research findings from professional literature.

Professional Dispositions

- Appreciates the importance of evidence-based practice.

International Reading Association's Standards for Reading Professionals:

Reading Specialist/Literacy Coach:
STANDARD 1: FOUNDATIONAL KNOWLEDGE

Element 1.1: Candidates understand major theories and empirical research that describe the cognitive, linguistic, motivational, and sociocultural foundations of reading and writing development, processes, and components, including word recognition, language comprehension, strategic knowledge, and reading–writing connections.

Element 1.2: Candidates understand the historically shared knowledge of the profession and changes over time in the perceptions of reading and writing development, processes, and components.

Element 1.3: Candidates understand the role of professional judgment and practical knowledge for improving all students' reading development and achievement.

STANDARD 2: CURRICULUM AND INSTRUCTION

Element 2.1: Candidates use foundational knowledge to design or implement an integrated, comprehensive, and balanced curriculum.

Element 2.2: Candidates use appropriate and varied instructional approaches, including those that develop word recognition, language comprehension, strategic knowledge, and reading–writing connections.

Element 2.3: Candidates use a wide range of texts (e.g., narrative, expository, and poetry) from traditional print, digital, and online resources.

III. Course Features

1) This course is presented in a web format.

2) **Full participation is essential**.

3) Please use your ASU email to communicate with your instructor and to receive a reply safely. I check email at least once a day. I will respond within 24 hours during the week. If you do not hear from me within two days, please e-mail me again.

4) Additional readings, lesson models, rubrics, assignment directions, some lecture notes, and additional information will be placed on Blackboard. **Materials placed on Blackboard will be the responsibility of the student to acquire**.

5) **All written work for the course should be thoroughly proofread/revised/edited** and should use a Times New Roman style font, 12-point size, double-spaced, with one-inch margins.

   Works cited and in-text citation **should consistently follow APA format**. Assignments accepted via ASU email or Blackboard must be in Microsoft Word format (.doc or .docx) only. There may be opportunities for peer editing or peer review of written work.

6) **All items on this syllabus are subject to change**. Modifications in requirements, assignments, and the tentative course outline will be made as necessary with reasonable advance notice given to students in the course.

7) **Always remember that the professor is committed to your success**. Keep us posted by whatever means you have available as to your successes, struggles, questions, or comments in the course. The stronger our communication, the greater your chances of success in the course.

IV. Academic Integrity

Plagiarism will not be tolerated. Written assignments and test/quizzes and projects may not be copied from a student's prior work, the work of other students, from models used by the instructor, or from published material including the Internet. According to the Student Handbook, cheating and plagiarism may result in a student being asked to leave the academic community, may result in a failing grade for the course, may result in a failing grade for the assignment.

V. Course Assessments and Performance Measures

Participation 20 points
Article Presentations 10 points
Midterm 20 points
Annotated Bibliography 30 points
Final 20 points

Grades will be based on the total points earned divided by the total possible points for the course.
Grading Scale:
A: 90-100
B: 80-89
C: 70-79
F: 69 or below

XIV. Procedures to Accommodate Students with Disabilities

The Department of Teacher Education makes reasonable accommodation for qualified students with medically documented disabilities. "Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration, and within the first two weeks of class, please contact me to discuss appropriate academic accommodations" (http://www2.astate.edu/disability or (870) 972-3964).

XV. Diversity

Diversity will be addressed in but not limited to the areas: assignments, readings, discussions and classroom activities. Additionally, strength and challenges of diversity are throughout all sections of the curriculum. Some of the literature presented and used as examples will be multicultural in nature. In addition, we will be discussing diversity in the literacy classroom and how to adapt instruction for English Language and at-risk learners. Included will be teaching strategies for the learning disabled and the economically disadvantaged students.

In this class, students will have opportunities to draw effectively on their own experiences and cultures when developing their class activities. With the Instructor serving as a model in the classroom, the students are learning to (Pathwise Domain B):

F. Create a climate that promotes fairness to all.
G. Establish and maintain the appropriate rapport with students.
H. Communicate challenging learning expectations to each student.
I. Establish and maintain consistent standards of classroom behavior.
J. Make the physical environment as safe and conducive to learning as possible.

Schedule
(Tentative)

Module	Topic and Readings	Readings
1	Introduction – Language acquisition overview	Video Reflection
2	Language Socialization – Ethnographic view of Language and literacy acquisition	Ochs & Schifflin Heath (1982)
3	Social interactions and language acquisition	Bloom (2002) Ely & Gleason (2006)
4	Language and Education	Bruner (1986) Wells (1987) Mercer (1995)
5	Classroom discourse 1	Cazden (2001) Ch. 1-3
6	Classroom discourse 2	Cazden (2001) Ch. 4-6
7	Classroom discourse 3	Maloch (2002)
8	Midterm	
9	Cultural differences in talk	Cazden (2001) Ch. 7 TBA
10	Second language acquisition 1	Freeman & Freeman Ch. 1-4
11	Second language acquisition 2	Freeman & Freeman Ch. 7-9
12	Bilingualism and Biliteracy	Moll, Saez, & Dworin (2003) Reyes (2006) Song (2015)
13	Language and identity	TBA
14	Language and ideology	Gee (2006)

Arkansas State University

College of Education
Department of Teacher Education
RDNG 7493:
Reading and Writing Capstone
This course is delivered completely online.

D. Required Primary Texts:

Bean, R., Heisey, N., & Roller, C. (2010). *Preparing reading professionals (2nd ed.)*. Newark, DE: International Reading Association.

Articles and other assigned readings for the course that will be posted on Blackboard

E. Supplemental Text:

APA Manual, 6th edition. Recommended.

F. Software:

Microsoft Office. Free to ASU students at http://www.astate.edu/a/its/software-downloads/

Course Description:

Serves as both the review and comprehensive examination of program content with a focus on developing descriptive, analytical, and reflective writings that demonstrate effective applications of practices for literacy instruction. Must be taken in final semester of coursework.

Course Outcomes

Outcome 1	Candidates will create study guides, outlines, or reflective journal entries in order to synthesize the theoretical and evidence-based foundations of reading and writing processes and instruction.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A personal study guide, outline, or reflective summary journal entry
Outcome 2	Candidates will create study guides, outlines, or other review tools in order to synthesize the tenets of instructional approaches, materials, and an integrated, comprehensive, balanced curriculum that supports student learning in reading and writing.

Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A personal study guide, outline, or reflective summary journal entry
Outcome 3	Candidates will create study guides, outlines, or other review tools in order to synthesize the use of a variety of assessment tools and practices that could be used to plan and evaluate effective reading and writing instruction.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A series of comprehensive exam questions.
Outcome 4	Candidates will create study guides, outlines, or other review tools in order to synthesize their understandings of how awareness, understanding, respect, and valuing of differences in our society impacts literacy development.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A series of comprehensive exam questions.
Outcome 5	Candidates will create study guides, outlines, or other review tools in order to synthesize their understandings of integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments for creating a literate environment.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A series of comprehensive exam questions.
Outcome 6	Candidates will create study guides, outlines, or other review tools in order to synthesize their understandings of professional learning and leadership as a career-long effort and responsibility.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A series of comprehensive exam questions.

Program Outcomes

Program-Level Outcome 1 (from question #23)	Standard 1: Foundational Knowledge: Reading Specialist/Literacy Coach candidates understand the theoretical and evidence-based foundations of reading and writing processes and instruction. Standard 2: Curriculum and Instruction**:** Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing. Standard 3: Assessment and Evaluation**:** Candidates use a variety of assessment tools and practices to plan and evaluate effective reading and writing instruction. Standard 4: Diversity**:** Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society. Standard 5: Literate Environment**:** Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments.
Assessment Measure	A series of comprehensive exam questions.
Assessment Timetable	These will take place during the middle and at the end of the course.
Who is responsible for assessing and reporting on the results?	The professor on record will be responsible for administering the assessment, and the reading area group coordinator will be responsible for analyzing and reporting the results.

This course supports the International Literacy Association (ILA) 2010 Standards:

Standard 1: Foundational Knowledge

Candidates understand the theoretical and evidence-based foundations of reading and writing processes and instruction

Element 1.1: *Candidates understand major theories and empirical research that describe the cognitive, linguistic, motivational, and sociocultural foundations of reading and writing development, processes, and components, including word recognition, language comprehension, strategic knowledge, and reading–writing connections.*

Element 1.2: *Candidates understand the historically shared knowledge of the profession and changes over time in the perceptions of reading and writing development, processes, and components.*

Element 1.3: *Candidates understand the role of professional judgment and practical knowledge for improving all students' reading development and achievement.*

Standard 2: Curriculum and Instruction

Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing.

Element 2.1: *Candidates use foundational knowledge to design or implement an integrated, comprehensive, and balanced curriculum.*
Element 2.2: *Candidates use appropriate and varied instructional approaches, including those that develop word recognition, language comprehension, strategic knowledge, and reading–writing connections.*
Element 2.3: *Candidates use a wide range of texts (e.g., narrative, expository, and poetry) from traditional print, digital, and online resources.*

Standard 3: Assessment and Evaluation

Candidates use a variety of assessment tools and practices to plan and evaluate effective reading and writing instruction.

Element 3.1: *Candidates understand types of assessments and their purposes, strengths, and limitations.*
Element 3.2: *Candidates select, develop, administer, and interpret assessments, both traditional print and electronic, for specific purposes.*
Element 3.3: *Candidates use assessment information to plan and evaluate instruction.*
Element 3.4: *Candidates communicate assessment results and implications to a variety of audiences.*

Standard 4: Diversity

Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society.

Standard 5: Literate Environment

Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments.

Element 3.1: *Candidates design the physical environment to optimize students' use of traditional print, digital, and online resources in reading and writing instruction.*
Element 3.2: *Candidates design a social environment that is low risk and includes choice, motivation, and scaffolded support to optimize students' opportunities for learning to read and write.*
Element 3.3: *Candidates use routines to support reading and writing instruction (e.g., time allocation, transitions from one activity to another; discussions, and peer feedback).* **Element 3.4:** *Candidates use a variety of classroom configurations (i.e., whole class, small group, and individual) to differentiate instruction.*

Standard 6: Professional Learning and Leadership

Candidates recognize the importance of, demonstrate, and facilitate professional learning and leadership as a career-long effort and responsibility.

Element 6.2: *Candidates display positive dispositions related to their own reading and writing and the teaching of reading and writing, and pursue the development of individual professional knowledge and behaviors.*

Element 6.3: *Candidates participate in, design, facilitate, lead, and evaluate effective and differentiated professional development programs.*

Course Outline

Week 1: Review of key concepts for the theoretical and evidence-based foundations of reading and writing processes and instruction
Week 2: Review of instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing
Week 3: Applied case study to review and make recommendations
Week 4: Comprehensive Exam Question #1
Week 5: Review of assessment tools and practices to plan and evaluate effective reading and writing instruction
Week 6: Review of literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society
Week 7: Applied case study to review and make recommendations
Week 8: Comprehensive Exam Question #2
Week 9: Review of the integration of foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments
Week 10: Review of professional learning and leadership as a career-long effort and responsibility
Week 11: Comprehensive Exam Question #3
Week 12: Key concepts from qualitative reading research
Week 13: Key concepts for quantitative reading research
Week 14: Comprehensive Exam Question #4

Course Policies and Logistics

2) **Candidates are expected to complete Blackboard discussion** posts in the following manner: **initial discussion posts** due on **Thursdays** by 11:59 pm; **responses to peers** due on **Sundays** by 11:59 pm.

4) **Candidates are responsible for completing all work** as stated in this syllabus.

5) It is the candidate's responsibility to maintain safe/efficient saving of files and their work. **Due to recent abuse and over extension of flexibility due to computer difficulties,** candidates are advised to take the following steps: ***1) back up all files related to this course on a second computer location (e.g. personal laptop + home/desktop or work computer); 2) utilize an external hard drive in addition to computer backup; 3) utilize an additional USB stick/jump drive, in addition to computer and external hard drive backups; 4) save all files on some type of "cloud" or at the very least, attached to saved emails within you're A-State email account.***

12) Except in cases of **serious** extenuating circumstances, tardy work will not be accepted. The course professor will determine if the excuse for late work rises to the level of being a "serious extenuating circumstance." Procrastination, pressure of work in other courses, and work not connected with the course are not considered emergency situations. Personal computer and connection issues do not constitute an emergency. This is an online course; plan ahead and anticipate an alternative to primary computer and internet connection in the event of unexpected computer or internet problems.

13) **Do not use any other email address besides you're A-State email** to contact the instructor. *Do not assume I received your email unless you have received a reply.*

14) **All formal work for the course should be** 12-point sized font, double-spaced, with one-inch margins.

15) References and in-text citation **should consistently follow APA 6th edition format**.

16) **Assignments must be in Microsoft Word format (.doc or .docx) only.** ***No exceptions!***

17) Except in cases of **serious** extenuating circumstances, tardy work will not be accepted. The course professor will determine if the excuse for late work rises to the level of being a "serious extenuating circumstance." Procrastination, pressure of work in other courses, and personal responsibilities not connected with this course are not considered emergency situations. Additionally, personal computer and connection issues do not constitute an emergency. Because this is an online course, plan ahead and prepare alternatives to your primary computer and internet connection in the event of unexpected computer or internet problems.

18) Authorship & FERPA **apply to all assignments submitted in this course.**
By submitting assignments to my instructor, I affirm that all the information I submit is my work unless otherwise referenced. For confidentiality purposes, the names of all referents (especially minors) have been changed or deleted. I understand that any evidence of plagiarism will be immediately investigated at the college and university levels and may result in adverse consequences.

19) Flexibility Clause: This syllabus is subject to change. However, you will be notified of any changes that occur prior to any due date for assignments.

Course Grading

A	92-100	C	74-82
B	83-92	**F**	**0-73**

Procedures to Accommodate Students with Disabilities

If you need course adaptations or accommodations because of a disability, have emergency medical information to share, or need special arrangements, please notify the professor ASAP and/or the A-State Officer of Disabilities http://www2.astate.edu/disability/ 870-972-3964.

Inclement Weather Policy

The University's Inclement Weather Policy if found in the Student Handbook:
The university remains open for academic classes and all other services during inclement weather except in extreme circumstances determined solely by the Chancellor of the University. Regional and local news media will publicize the closing. Commuter students are encouraged to use good judgment in deciding whether to drive to campus during inclement weather. In those cases where the decision is made not to travel to campus under this policy, it is the responsibility of the student to immediately contact each of his/her professors upon return to explain the circumstances and to determine the need to complete any missed assignments. The student is responsible for all missed assignments during inclement weather within a time frame to be determined by the professor.

Academic Misconduct Policy:

The entire ASU's Academic Integrity Policy is in the Student Handbook at http://www.astate.edu/a/student-conduct/student-standards/handbook-home.dot]

RDNG 7543
New Literacies (Ed.S. Reading)
Fall

I Instructor Information

Dr. Ryan R. Kelly, Associate Professor of Reading

Arkansas State University, School of Teacher Education and Leadership
College of Education and Behavioral Science

Office Location: Education/Communication Building, Room 374
Office Hours: Tuesday and Thursday, 12:30-2:30 PM

Direct Line: (870) 680-8445 Email: rkelly@astate.edu (Preferred)
Main Office: (870) 972-3059 Fax: (870) 972-3344

II. Course Texts and Resources

Required:

1. Gee, J.P. (2007). *What video games have to teach us about learning and literacy* (2nd ed.). New York: Palgrave Macmillian.
2. Hagood, M., ed (2009). *New literacies practices: Designing literacy learning*. New York: Peter Lang.
3. Lankshear, C. & Knobel, M. (2006). *New literacies: Everyday practices and classroom learning*. Philadelphia: Open University Press.

Recommended:

4. Beach, R. (2006). *Teachingmedialiteracy.com: A web-linked guide to resources and activities.* New York: Teachers College Press.
5. Hobbs, R. (2007). *Reading the media in high school: Media literacy in high school english.* New York: Teachers College Press.
6. Fabos, B. (2004). *Wrong turn on the information superhighway: Education and the commercialization of the internet*. New York: Teachers College Press.

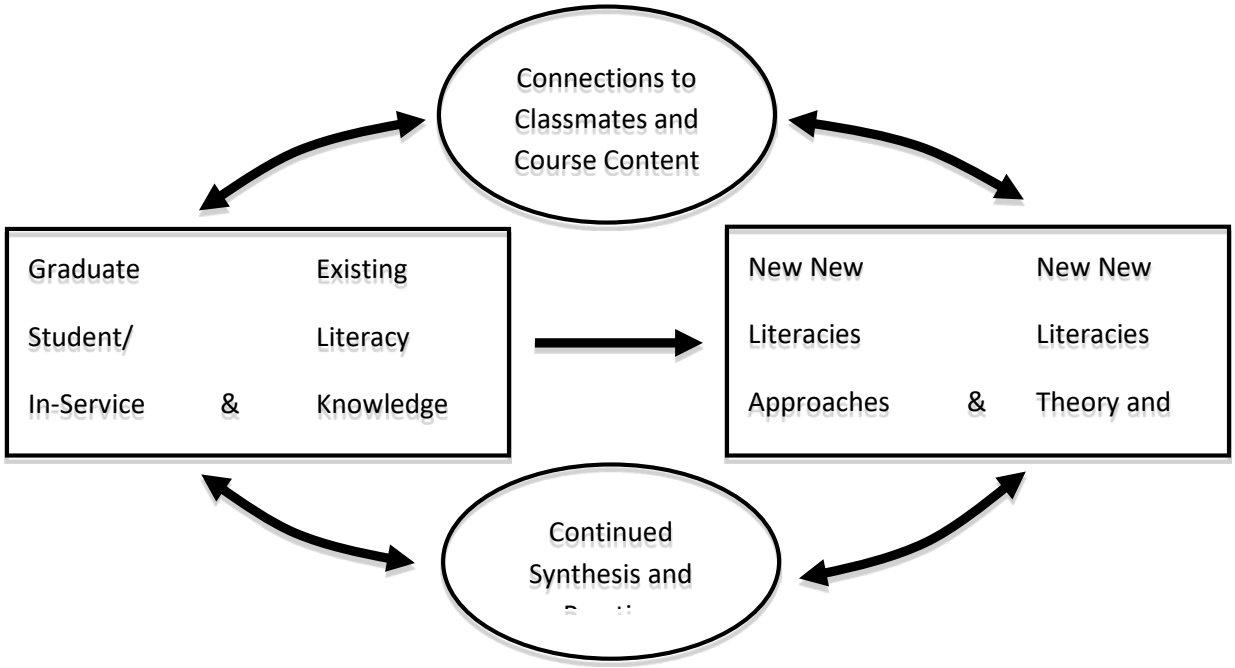
7. *Additional Weekly Readings in PDF Form or URL*
(Available via Blackboard)

Note: These readings are subject to change, continued engagement; student contribution is welcome and encouraged.

III. Purpose or Goals of the Course

- Catalog description: An overview of theoretical and pedagogical frameworks of the New Literacies, especially where they intersect student lives, culture, and technology
- A detailed examination of major theorists in New Literacies with full immersion in their work and theoretical designs
- Opportunities to synthesize theoretical thinking on New Literacies in the examination of primary text and supplemental articles.
- Opportunities to produce materials for classroom practice derived from theoretical exploration of New Literaces literature
- Further fusion and synthesis of theory and practice with presentation and hopeful implementation of classroom results.

IV. Course Conceptual Model



V. Major Course Goals

1 Primary Course Goal: This course will provide a rigorous theoretical background on New Literacies content with the opportunity to further synthesize thinking around this theory and also apply it to current classroom practice.

2. The student will have a detailed understanding of each "block" of New Literacies theory.

3. The student will apply New Literacies Theory in each "block" to relevant classroom practice.

4. The student will synthesize a revised and more unified intersection of New Literacies theory and practice, based upon content from one of the three "blocks."

VI. Course Instructional Objectives

1) Students will complete a comprehensive series of readings designed to build focus around New Literacies theory and practice.

2) Students will develop various theoretical explorations (research papers) on the New Literacies theory for each of the three "blocks."

3) Students will create a practitioner project applying New Literacies theory to classroom instruction for each of the three "blocks."

4) Students will revise and fully integrate the theoretical explorations and the practitioner projects from one or more of the three "blocks" for class presentation at the Final Symposium (with relevant Reflection).

VII. Course Linkage/Alignment (ASU MSE Conceptual Framework and NCTE/IRA)

Course is aligned to the following Conceptual Framework (ASU Professional Education Advanced Programs Conceptual Framework—Strengthening and Enriching Learning):

Professional Identity: Advanced candidates demonstrate commitment through leadership and advocacy for professional practice in accordance to legal and ethical standards within a multicultural and pluralistic society.

Knowledge

- Understands ethical and legal standards.
- Understands the importance of and strategies for effective advocacy on behalf of the profession.

Skills

- Demonstrates competence in applying knowledge of content and research in professional practice.
- Promotes and applies ethical and legal standards in decision-making.
- Demonstrates professionalism in use of digital media.

Professional Dispositions

- Values the importance of professional organizations, credentialing standards, and legal and ethical standards as indicators of one's professional identity.
- Demonstrates self-efficacy by effectively reflecting on professional practice.

Diversity: Advanced candidates demonstrate in-depth understanding of and respect for diversity and its implications for learning.

Knowledge

- Understands societal factors such as gender, race, social class, ethnicity, ability,

sexual orientation, age, and religion that impact student learning.

Skills

- Plans and creates experiences that help all students learn.
- Demonstrates ability to build collaborative relationships among schools, families, and communities.
- Demonstrates acceptance and respect for persons with diverse ideas, values, and behavioral practices.

Professional Dispositions

- Values and respects individuals and their differences.
- Believes all students can learn.

Advanced Knowledge and Skills: Advanced candidates demonstrate mastery of content and pedagogical knowledge and skills to apply that knowledge effectively in school settings.

Knowledge

- Knows content and concepts of the discipline at an advanced level.
- Understands the interdisciplinary nature of content and pedagogical knowledge.

Skills

- Demonstrates knowledge through inquiry, critical analysis, and synthesis of discipline-specific content.
- Shares content in challenging, clear, and compelling ways using real world contexts and integrating appropriate technologies.
- Selects and develops strategies and technologies, based on research and experience, to help all students learn.
- Reflects to enhance professional practice.

Professional Dispositions

- Values caring and supportive learning environments that encourage self-direction by all students.
- Values life-long learning and **mastery of content and pedagogical knowledge.**

Ecological Dimensions: Advanced candidates demonstrate understanding of influences derived from family, school, and community contexts that impact student learning and development.

Knowledge

- Understands the complexities of social systems that impact student learning.

Skills

- Demonstrates a high level of skill in identifying the human, material and technological resources necessary to be effective within their professional role.
- Demonstrates understanding of developmentally appropriate individual, family, and group strategies for working with diverse populations.

Professional Dispositions

- Values the intertwining role of family, community, and schools and their impact on student learning.
- Appreciates the uniqueness and worth of each student while recognizing the necessity for interdependent functioning and fairness to promote living together within the common society.

Evidence-Based Practices: Advanced candidates apply research-based knowledge to promote

optimal development of all constituents and generate data for decision-making.

Knowledge

- Understands the relevance of research findings and performance data.

Skills

- Collects and analyzes student assessment data and makes data-driven decisions to improve student learning.
- Demonstrates ability to apply research methods and statistical techniques to improve professional practice.
- Demonstrates ability to interpret and apply research findings from professional literature.

Professional Dispositions

- Appreciates the importance of evidence-based practice.

Course is aligned to the following IRA 2010 Standards and Elements:

Standard 1: Foundational Knowledge

Reading Specialist/Literacy Coach Candidates understand the theoretical and evidence-based foundations of reading and writing processes and instruction.

Elements:

1.1: Understand major theories and empirical research that describe the cognitive, linguistic, motivational, and sociocultural foundations of reading and writing development, processes, and components, including word recognition, language comprehension, strategic knowledge, and reading–writing connections.
1.2: Understand the historically shared knowledge of the profession and changes over time in the perceptions of reading and writing development, processes, and components.
1.3: Understand the role of professional judgment and practical knowledge for improving all students' reading development and achievement.

Standard 2: Curriculum and Instruction

Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing.

Elements:

2.1: Use foundational knowledge to design or implement an integrated, comprehensive, and balanced curriculum. [Reading specialists may have responsibilities for teaching students who struggle with learning to read and must also be able to support teachers in their efforts to provide effective instruction for all students.]
2.2: Use appropriate and varied instructional approaches, including those that develop word recognition, language comprehension, strategic knowledge, and reading–writing connections.
2.3: Use a wide range of texts (e.g., narrative, expository, and poetry) from traditional print, digital, and online resources.

Standard 3: Assessment and Evaluation

Candidates use a variety of assessment tools and practices to plan and evaluate effective reading and writing instruction.

Elements:

3.1: Understand types of assessments and their purposes, strengths, and limitations.
3.2: Select, develop, administer, and interpret assessments, both traditional print and electronic, for specific purposes. [Reading specialists may have responsibilities for teaching students who struggle with learning to read and must also be able to support teachers in their efforts to provide effective instruction for all students.]
3.3: Use assessment information to plan and evaluate instruction.
3.4: Communicate assessment results and implications to a variety of audiences.

Standard 4: Diversity

Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society.

Elements:

4.1: Recognize, understand, and value the forms of diversity that exist in society and their importance in learning to read and write. [Reading specialists may have responsibilities for teaching students who struggle with learning to read and must also be able to support teachers in their efforts to provide effective instruction for all students.]
4.2: Use a literacy curriculum and engage in instructional practices that positively impact students' knowledge, beliefs, and engagement with the features of diversity.
4.3: Develop and implement strategies to advocate for equity.

Standard 5: Literate Environment

Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments.

Elements:

5.1: Design the physical environment to optimize students' use of traditional print, digital, and online resources in reading and writing instruction.
5.2: Design a social environment that is low risk and includes choice, motivation, and scaffolded support to optimize students' opportunities for learning to read and write. [Reading specialists may have responsibilities for teaching students who struggle with learning to read and must also be able to support teachers in their efforts to provide effective instruction for all students.]
5.3: Use routines to support reading and writing instruction (e.g., time allocation, transitions from one activity to another; discussions, and peer feedback).
5.4: Use a variety of classroom configurations (i.e., whole class, small group, and individual) to differentiate instruction

Standard 6: Professional Learning and Leadership

Candidates recognize the importance of, demonstrate, and facilitate professional learning and leadership as a career-long effort and responsibility.

Elements:

6.1: Demonstrate foundational knowledge of adult learning theories and related research about organizational change, professional development, and school culture.

6.2: Display positive dispositions related to their own reading and writing and the teaching of reading and writing, and pursue the development of individual professional knowledge and behaviors. [This element deals with positive attitudes not only with colleagues but also with community members, parents and guardians, and so forth.]

6.3: Participate in, design, facilitate, lead, and evaluate effective and differentiated professional development programs.

6.4: Understand and influence local, state, or national policy decisions.

VIII. Course Policies and Logistics

1) **This course is offered via online delivery. A variety of teaching methods may still be utilized** in this course, when possible. These will include, but are not limited to demonstrations, audio-visual material, power point presentations, group discussions/debate, collaborative learning, journal writing, and literature review activities

2) **Students are responsible for completing all work** as stated in the Course Schedule (See Section XIII).

3) **No late work will be accepted** unless arrangements have been made in advance with the instructor or if an unexpected family or medical emergency is formally documented and brought to my attention.

4) ASU email (PREFERRED) or communication through Blackboard Discussion are the primary methods for contacting the instructor. **Do not use any other email address besides your ASU email** to contact the instructor. Do not assume I received your email unless I have replied personally. Be proactive and don't hesitate to follow-up on communication.

5) Publisher's Web Site: the publisher of your textbook may provide several student tools for your use. There may be practice tests, chapter objectives, web links for lesson plans, etc. I suggest you use this. Practice tests may be used as study guides. **The work on the publisher's website will not necessarily be replicated by the instructor.**

6) **Plagiarism will not be tolerated.** Written assignments and test/quizzes and projects may not be copied from a student's prior work, the work of other students, from models used by the instructor, or from published material including the Internet. According to the Student Handbook, cheating and plagiarism may result in a student being asked to leave the academic community, may result in a failing grade for the course, may result in a failing grade for the assignment.

If deemed guilty of plagiarism, Plagiarism on course work/papers/assessments will result in a grade of zero (0%) on the assignment. I will make every attempt to determine if plagiarism was intentional or unintentional and act accordingly, with resubmission options for assignments if I determine plagiarism was unintentional. Intentional plagiarism on multiple course assignments may result in an automatic "F" grade for the course.

7) Various course materials will be placed on Blackboard. **The student is responsible for acquiring materials placed on Blackboard.** Try to make good use of use your library/technology fees.

8) **All written work for the course should be thoroughly proofread/revised/edited** and should use a Times New Roman style font, 12-point size, double-spaced, with one-inch margins.

Works cited and in-text citation **should consistently follow APA format** (see Course Documents on Blackboard for APA assistance). Assignments accepted via ASU email or Blackboard must be in Microsoft Word format (.doc or .docx) only. No exceptions! There may be opportunities for peer editing or peer review of written work. **Advance drafts of papers for instructor feedback prior to deadlines are encouraged and welcomed.**

Papers handed in digitally will likely be returned to students in PDF format, with visible feedback comments attached by the instructor and possibly narrative comments at the end. Remember: **a paper is not "fully" handed in digitally until I have responded to the email to which it was attached.**

9) The instructor always welcomes **student effort to revise written work to improve a grade**. If all changes/revisions to the paper are successful, this will typically result in recovery of up to half of the missed points. Revision ideas and deadline must be negotiated and agreed upon with the instructor no later than two weeks after the assignment is returned to the student. Due to the logistics of the semester, this may not be possible for assignments handed in during the final two weeks of class.

The instructor also welcomes discussion with students about disputed paper grades. This must also take place or be scheduled no later than two weeks after the assignment is returned to the student. Due to the logistics of the semester, this may not be possible for assignments handed in during the final two weeks of class.

10) **All items on this syllabus are subject to change**. Modifications in requirements, assignments, and the tentative course outline will be made as necessary with reasonable advance notice given to students in the course. Adjustments to the course schedule are typically made available on Blackboard.

11) **Always remember that the instructor is committed to your success**. Keep me posted as to your successes, struggles, questions, or comments in the course. The stronger our communication, the greater your chances of success in the course. **We are colleagues!**

12) **Remember that you are graduate students in an advanced, post-Master's course.** I expect that you will fully engage with all coursework (readings, discussion, and assignments/assessment) with a professional and academic passion. Grades in a graduate course and program are **earned** and represent your attainment of an intense level of theoretical knowledge and potential for professional practice.

Students will not necessarily all reach this level at the same pace. I am committed to your success in this regard and will assist each of you as best I can in successfully completing the course.

IX. Course Grading

Course Grading Breakdown

Blackboard Discussions (Approx 24; points to be evenly distributed)	125
Block One Theoretical Exploration	125
Block One Practitioner Project	125
Block Two Theoretical Exploration	125
Block Two Practitioner Project	125
Block Three Theoretical Exploration	125
Block Three Practitioner Project	125
Final Symposium: Theory and Practice Synthesis	125
TOTAL POINTS	**1000**

Course Grading Scale (Note +/- does not apply to the grade for the Registrar)

A	920-1000	C	740-829
B	830-919	**F**	**0-739**

Incomplete "I" Grades

An Incomplete ("I") grade is appropriate when a student fails to meet all course requirements for reasons beyond the student's control (e.g. legitimately documented illness, bereavement, extended graduate student research). Procrastination, pressure of other courses, or work not connected with the student's school load, are not acceptable reasons for an "I" grade. All "I" grades must have prior approval of the department chair in which the course is offered, which requires the "Request for Incomplete Grade" form to be on file with the Registrar.

X. Course Online Discussion via Blackboard

Weekly coursework will take the form of online discussion/discourse on Blackboard. This is intended to increase class discourse in a different form, and offer a venue for students to directly engage with each other's thinking. It also represents a way to "synthesize and capture" knowledge. **When the course is delivered online, this method is critical.**

Blackboard discussion posting will essentially involve two discussion postings each week, one a Reading Response to any/all of the assigned reading for the week, the other a Peer Response that is more personal, and more about your classmates' thinking than the course readings.

A handout will overview Blackboard posting in greater detail and further define the nature of both the Reading Response post and the Peer Response post.

XI. Theoretical Explorations and Practitioner Projects

Students in this course will complete two kinds of assignments due at the end of each four-week "block:" a Theoretical Exploration and a Practitioner Project. The Theoretical Exploration will allow students the opportunity to assemble and synthesize some New Literacies thinking on the theoretical level. Each of these three formal academic syntheses should be **at least five full pages in APA format, not counting an APA-style cover page and References**.

The Practitioner Project will challenge students to more directly point their understanding of theory directly into the classroom. Length and scope of this will vary by "block" but will include various forms of classroom-ready materials or written description of ideas. Ultimately, the Practitioner Project should be "classroom ready" and, for in-service teachers, applicable to their classroom and—if possible—implemented with shared results.

A handout (via Blackboard) will overview the Theoretical Exploration and Practitioner Project in greater detail, include examples, and share the relevant grading rubric.

XII. Final Symposium: Theory and Practice Synthesis

The purpose of the Final Symposium is twofold. First, it aims to encourage classmates to share both their theoretical thinking and their applications as practitioners in a more public setting. Students can aim their work toward a higher theoretical level, can point it toward the most direct classroom application, or any point in between. Ideally, students will build additional connections between their two projects within a syllabus block, or further interconnect syllabus blocks. Additionally, the Final Symposium will offer possibilities to connect the two kinds of projects (strong theory informing strong practice) in ways that might inspire future development (even future thesis/dissertation research). Students will be encouraged to revise their theoretical explorations or better package their practitioner projects for further conference presentation or might aim students toward submitting their work to a journal at the intended level of their work. A brief reflection will accompany the Final Symposium presentation, with format open to negotiation between professor and student (but likely a written reflection), that situates student thinking when preparing the Final Symposium presentation within the broad context of the course. The reflection should, hopefully, set a direction for the student's continued thinking and exploration of New Literacies.

A handout (via Blackboard) will overview the Symposium requirements in greater detail and include the relevant grading rubric.

XIII. Course Schedule

* *Course Schedule will be available via Blackboard in addition to this Course Syllabus. Updates to Course Schedule will appear as needed and will follow the following format:*

WEEK	DAY	TOPIC	DUE (on this class meeting)

Week # *Online*	#/#	Key concepts requiring student understanding; topics central to Blackboard discussion posting; topics pertaining to major course assessments.	Course text chapters, sections, or supplemental readings. Author "And Title" are clearly indicated. **Major course assignments DUE are listed in Bold text.**

XIV. Procedures to Accommodate Students with Disabilities

The Department of Teacher Education makes reasonable accommodation for qualified students with medically documented disabilities. "Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration, and within the first two weeks of class, please contact me to discuss appropriate academic accommodations" (http://www2.astate.edu/disability or (870) 972-3964).

XV. Diversity

Diversity will be addressed in but not limited to the areas: assignments, readings, discussions and classroom activities. Additionally, strength and challenges of diversity are throughout all sections of the curriculum. Some of the literature presented and used as examples will be multicultural in nature. In addition, we will be discussing diversity in the literacy classroom and how to adapt instruction for English Language and at-risk learners. Included will be teaching strategies for the learning disabled and the economically disadvantaged students.

In this class, students will have opportunities to draw effectively on their own experiences and cultures when developing their class activities. With the Instructor serving as a model in the classroom, the students are learning to:

K. Create a climate that promotes fairness to all.
L. Establish and maintain the appropriate rapport with students.
M. Communicate challenging learning expectations to each student.
N. Establish and maintain consistent standards of classroom behavior.
O. Make the physical environment as safe and conducive to learning as possible.

RDNG 7613
Survey of Quantitative & Qualitative Literacy Research
Fall

I Course Information

Dr. Ryan R. Kelly, Associate Professor of Reading

Arkansas State University, College of Education and Behavioral Science
School of Teacher Education and Leadership

Office Location: Education/Communication Building, Room 374
Office Hours: Tuesday-Thursday, 10 AM-12 Noon (Tentative)

Direct Line: (870) 680-8445 Email: rkelly@astate.edu (Preferred)
Main Office: (870) 972-3059 Fax: (870) 972-3344

Personal cel phone number available via email request, if necessary, or will be provided.

II. Course Texts and Resources

Creswell, J. W. (2009). Research design: Qualitative, quantitative, and mixed methods approaches (3rd Edition). Thousand Oaks, CA: Sage Publications, Inc.

Selected chapters from Crotty (1998) The Foundations of Social Research and Bentz & Shapiro (1998) Mindful Inquiry in Social Research (Provided)

Additional readings as required by professor (Available via Blackboard)

III. Major Course Goals

Catalog description: An overview of research design, framework, and methodological approaches that spans qualitative and quantitative paradigms, including a mixed methods approach, within the context of literacy. Restricted to Ed.S Candidates or graduate students with permission of the instructor Prerequisite: ELFN 6773, Statistics and Research (or equivalent).

As a result of this course, Ed.S. – Reading candidates will:

1. Demonstrate a graduate level knowledge of qualitative and quantitative research framework and design.
2. Demonstrate a graduate level understanding of qualitative research epistemology and methodology.
3. Demonstrate a graduate level understanding of quantitative research epistemology and methodology.

IV. Course Instructional Objectives

Candidates will:

Learning Activity #1: The student will develop a mini-proposal of a qualitative or quantitative study.

Learning Activity #2: The student will collect qualitative data for analysis.

Learning Activity #3: The student will collect quantitative date for analysis.

V. Course Objectives (ASU Frameworks Linkage and NCTE/IRA)

Course is aligned to the following standards:

Arkansas State University
Advanced Programs Conceptual Framework
Strengthening and Enriching Learning

Central Elements
Candidate Knowledge, Skills, and Dispositions

Professional Identity: Advanced candidates demonstrate commitment through leadership and advocacy for professional practice in accordance to legal and ethical standards within a multicultural and pluralistic society.

Knowledge
- Understands ethical and legal standards.
- Understands the importance of and strategies for effective advocacy on behalf of the profession.

Skills
- Demonstrates competence in applying knowledge of content and research in professional practice.
- Promotes and applies ethical and legal standards in decision-making.
- Demonstrates professionalism in use of digital media.

Professional Dispositions
- Values the importance of professional organizations, credentialing standards, and legal and ethical standards as indicators of one's professional identity.
- Demonstrates self-efficacy by effectively reflecting on professional practice.

Diversity: Advanced candidates demonstrate in-depth understanding of and respect for diversity and its implications for learning.

Knowledge
- Understands societal factors such as gender, race, social class, ethnicity, ability, sexual orientation, age, and religion that impact student learning.

Skills
- Plans and creates experiences that help all students learn.
- Demonstrates ability to build collaborative relationships among schools, families, and communities.
- Demonstrates acceptance and respect for persons with diverse ideas, values, and behavioral practices.

Professional Dispositions
- Values and respects individuals and their differences.

- Believes all students can learn.

Advanced Knowledge and Skills: Advanced candidates demonstrate mastery of content and pedagogical knowledge and skills to apply that knowledge effectively in school settings.

Knowledge
- Knows content and concepts of the discipline at an advanced level.
- Understands the interdisciplinary nature of content and pedagogical knowledge.

Skills
- Demonstrates knowledge through inquiry, critical analysis, and synthesis of discipline-specific content.
- Shares content in challenging, clear, and compelling ways using real world contexts and integrating appropriate technologies.
- Selects and develops strategies and technologies, based on research and experience, to help all students learn.
- Reflects to enhance professional practice.

Professional Dispositions
- Values caring and supportive learning environments that encourage self-direction by all students.
- Values life-long learning and mastery of content and pedagogical knowledge.

Ecological Dimensions: Advanced candidates demonstrate understanding of influences derived from family, school, and community contexts that impact student learning and development.

Knowledge
- Understands the complexities of social systems that impact student learning.

Skills
- Demonstrates a high level of skill in identifying the human, material and technological resources necessary to be effective within their professional role.
- Demonstrates understanding of developmentally appropriate individual, family, and group strategies for working with diverse populations.

Professional Dispositions
- Values the intertwining role of family, community, and schools and their impact on student learning.
- Appreciates the uniqueness and worth of each student while recognizing the necessity for interdependent functioning and fairness to promote living together within the common society.

Evidence-Based Practices: Advanced candidates apply research-based knowledge to promote optimal development of all constituents and generate data for decision-making.

Knowledge
- Understands the relevance of research findings and performance data.

Skills
- Collects and analyzes student assessment data and makes data-driven decisions to improve student learning.
- Demonstrates ability to apply research methods and statistical techniques to improve professional practice.
- Demonstrates ability to interpret and apply research findings from professional literature.

Professional Dispositions
- Appreciates the importance of evidence-based practice.

International Reading Association's Standards for Reading Professionals:

Reading Specialist/Literacy Coach:

STANDARD 1: FOUNDATIONAL KNOWLEDGE

Element 1.1: *Candidates understand major theories and empirical research that describe the cognitive, linguistic, motivational, and sociocultural foundations of reading and writing development, processes, and components, including word recognition, language comprehension, strategic knowledge, and reading–writing connections.*

Element 1.2: *Candidates understand the historically shared knowledge of the profession and changes over time in the perceptions of reading and writing development, processes, and components.*

Element 1.3: *Candidates understand the role of professional judgment and practical knowledge for improving all students' reading development and achievement.*

STANDARD 3: ASSESSMENT AND EVALUATION

Element 3.1: *Candidates understand types of assessments and their purposes, strengths, and limitations.*

Element 3.2: *Candidates select, develop, administer, and interpret assessments, both traditional print and electronic, for specific purposes.*

Element 3.3: *Candidates use assessment information to plan and evaluate instruction.*

Element 3.4: *Candidates communicate assessment results and implications to a variety of audiences. plan and evaluate instruction.*

VI. Course Features

8) This course is designed for Ed.S.-Reading candidates and serves as a key element in their preparation to engage in thesis research and publication. Candidates should use their experience in this course to:

   A. Select a topic for research
   B. Conduct a review of literature related to the selected topic
   C. Develop a framework/research design to conduct thesis research
   D. Write a mini-proposal that will facilitate future thesis research

9) Candidates should become familiar with ASU's Graduate School's "Guide to Thesis and Dissertation" (available: http://www.astate.edu/a/graduate/thesis-and.dot). These guidelines should be followed when preparing various components of the mini-proposal for thesis research.

10) Because of the individuality of respective candidate's research projects, candidates are expected to engage fully and independently. The following points should be considered throughout the semester:

   A. You will be provided a framework for completion of certain aspects of your coursework. This framework is designed to assist you in managing your time and completing required assignments. It is understood that Ed.S. level candidates are generally employed and balancing busy lives. Therefore, it is incumbent on the candidate to manage his/her time in order to facilitate completion of the assignments.

B. While certain aspects of your coursework are expected to be managed independently throughout the semester (with a framework provided), other assignments are designed to facilitate the candidate's understanding of both quantitative and qualitative research epistemology, design, and methodology. It is essential that candidates complete these assignments in a timely manner. Deadlines will be provided for these assignments. These deadlines should be honored. Failure to meet these deadlines will negatively impact your appreciation of the course content, limit your ability to engage in discussions with professors and classmates, and possibility negatively impact your grade.

11) ASU email should be used to communicate with the professor. Other email addresses can be problematic and not compatible with ASU email. I check email at least once a day.

12) **Plagiarism will not be tolerated.** Written assignments and test/quizzes and projects may not be copied from a student's prior work, the work of other students, from models used by the instructor, or from published material including the Internet. According to the Student Handbook, cheating and plagiarism may result in a student being asked to leave the academic community, may result in a failing grade for the course, may result in a failing grade for the assignment.

    If deemed guilty of plagiarism, Plagiarism on course papers will result in a grade of zero (0%) on the assignment. I will make every attempt to determine if plagiarism was intentional or unintentional and act accordingly, with resubmission options for assignments if I determine plagiarism was unintentional. Intentional plagiarism on multiple course assignments may result in an automatic "F" grade for the course.

13) Additional readings, lesson models, rubrics, assignment directions, some lecture notes, and additional information may be placed on Blackboard. **Materials placed on Blackboard will be the responsibility of the student to acquire**.

14) **All written work for the course should be thoroughly proofread/revised/edited** and should use a Times New Roman style font, 12-point size, double-spaced, with one-inch margins.

    Works cited and in-text citation **should consistently follow APA format**. Assignments accepted via ASU email or Blackboard must be in Microsoft Word format (.doc or .docx) only. There may be opportunities for peer editing or peer review of written work.

15) **All items on this syllabus are subject to change**. Modifications in requirements, assignments, and the tentative course outline will be made as necessary with reasonable advance notice given to students in the course.

16) **Always remember that the professors are committed to your success**. Keep us posted by whatever means you have available as to your successes, struggles, questions, or comments in the course. The stronger our communication, the greater your chances of success in the course.

VII. Course Assessments and Performance Measures

1) Satisfactory completion of the Collaborative IRB Training Initiative (CITI) in the Protection of Human Research Subjects (with a score of 85% or better) is required.

2) Candidates will obtain IRB approval for research with human subjects through ASU's IRB Review Board/Office of Research and Technology.

3) Information regarding this training is located at http://www.astate.edu/a/ortt/research-compliance/.

4) Candidates will complete a mini-proposal for thesis research. Components of this assignment, detailed guidelines, and a time management framework will be provided.

5) Candidates may complete up to 3 additional assignments, depending on emerging research areas/topics, designed to facilitate a more cohesive understanding of qualitative and quantitative epistemology, research design, and methodology, when necessary. In the event of significantly different research areas/topics, the professor will work individually with candidates to mentor and enrich the understanding of methodology. Assignment details will be provided, if necessary, and if additional assignments are needed they will become an active element in the research mini-proposal.

6) Candidates will complete reading assignments and participate in discussions.

7) Candidates will present their research mini-proposals in class.

VIII. Course Grading

Course Grading Breakdown

Assignment	Points
IRB Approval for Human Subject Research	200
Research mini-proposal	500
Participation in Discussions	200
Mini-proposal presentation	100
TOTAL	1000

Course Grading Scale (Note +/- does not apply to the grade for the Registrar)

A	920-1000	C	740-829
B	830-919	**F**	**0-739**

Incomplete "I" Grades

An Incomplete ("I") grade is appropriate when a student fails to meet all course requirements for reasons beyond the student's control (e.g. serious illness, bereavement, extended graduate student research). Procrastination, pressure of other courses, or work not connected with the student's school load are not

acceptable reasons for an "I" grade. All "I" grades must have prior approval of the department chair in which the course is offered, which requires the "Request for Incomplete Grade" form to be on file with the Registrar.

IX. Procedures to Accommodate Students with Disabilities

The Department of Teacher Education makes reasonable accommodation for qualified students with medically documented disabilities. "Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration, and within the first two weeks of class, please contact me to discuss appropriate academic accommodations" (http://www2.astate.edu/disability or (870) 972-3964).

X. Diversity

Diversity will be addressed in but not limited to the areas: assignments, readings, discussions and classroom activities. Additionally, strength and challenges of diversity are throughout all sections of the curriculum. Some of the literature presented and used as examples will be multicultural in nature. In addition, we will be discussing diversity in the literacy classroom and how to adapt instruction for English Language and at-risk learners. Included will be teaching strategies for the learning disabled and the economically disadvantaged students.

In this class, students will have opportunities to draw effectively on their own experiences and cultures when developing their class activities. With the Instructor serving as a model in the classroom, the students are learning to (Pathwise Domain B):

P. Create a climate that promotes fairness to all.
Q. Establish and maintain the appropriate rapport with students.
R. Communicate challenging learning expectations to each student.
S. Establish and maintain consistent standards of classroom behavior.
T. Make the physical environment as safe and conducive to learning as possible.

XI. Course Calendar

* *Course Schedule will be available via Blackboard in addition to this Course Syllabus. Updates to Course Schedule will appear as needed and will follow the following format:*

DATE	TOPIC	ASSIGNMENTS (on this class meeting)
Date *In Class or Online*	Key concepts requiring student understanding; topics central to Blackboard discussion posting; topics pertaining to major course assessments.	Course text chapters, sections, or supplemental readings. Author "And Title" are clearly indicated.

		Major course assignments DUE are listed in Bold text.

XII. References and Journals

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print.* Cambridge, : MIT Press.

Beck, I., McKeown, M., & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction*. New York, NY: The Guildford Press.

Braunger, J.and Lewis, J. (2008). *Building a Knowledge Base in Reading* (2nd Ed) IRA www.reading.org

Clark, C. H. (1995). Teaching students about reading: A fluency example. *Reading Horizons, 35*, 250-267.

Duke, N. K., & Pearson, P. D. (2002). Effective practices for developing reading comprehension. In A. Farstrup & J. Samuels (Eds.), *What research has to say*

about reading instruction (pp. 205-242). Newark, DE: International Reading Association.

Fountas, I., & Pinnell, G. (1996). *Guided reading: Good first teaching for all children*. Portsmouth, NH: Heinemann.

Harvey, S., & Goudvis, A. (2000). *Strategies that work.* Portland, ME: Stenhouse.

Hindley, J. (1996). *In the company of children.* York, ME: Stenhouse.

International Reading Association (2008). www.reading.org

Kame'enui, E. J., & Carnine, D. (1998). *Effective teaching strategies that accommodate diverse*

learners. Upper SaddleRiver, NJ: Prentice Hall.

Peterson, R. (1990). *Life in a crowded place.* Portsmouth, NH: Heinemann.

Pressley, M., & Block, C. C. (Eds.). (2001). *Comprehension instruction: Research-based best practices*. New York, NY:The Guilford Press.

Rasinski, T. V. (2003). *The fluent reader: Oral reading strategies for building word recognition.* New York, NY: Scholastic.

Routman, R. (1999). *Conversations.* Portsmouth, NH: Heinemann.

Routman, R. (2001). *Reading essentials.* Portsmouth, NH: Heinemann.

Smith, F. (1988). *Joining the literacy club*. Portsmouth, NH: Heinemann.

Strickland, D. S. (1998). *Teaching phonics today: A primer for educators.* Newark, DE: International Reading Association.

Torgesen, J. K., & Mathes, P. G. (1998). *What every teacher should know about phonological awareness.* Florida StateUniversity, Florida Department of Education.

Tovanie, C. (2000). *I read it, but I don't get it: Comprehension strategies adolescent readers.* Portland, ME: Stenhouse Publishers.

Arkansas State University

Syllabus for:
RDNG 7643
Social Foundations of Literacy

I. Course Information:

A. RDNG 7643; Social Foundations of Literacy

B. Professor: Patty Murphy, Ed.S.

C. Contact information: pmurphy@astate.edu

D. Class Location and time: T - #105 – 6:00 – 8:50

II. Readings

A. Primary Texts:

Heath, S. B. (1983). *Ways with words: Language, life, and work in communities and classrooms.* New York, NY: Cambridge University Press.

Lewis, C.; Enciso, P.; & Moje, E. B. (2007). *Reframing sociocultural research on literacy: Identity, agency, and power*. Mahway, NJ: Lawrence Erlbaum Associates, Inc.

B. Assigned Readings:

Articles, other assigned readings, and multimedia resources for the class will be posted on Blackboard.

C. Book Selection:

Students will select **one** of the following texts to read and share with colleagues. Each student will have a different book.

Brandt, D. (2001). *Literacy in American Lives.* New York, NY: Cambridge University Press.

Brandt, D. (2009). *Literacy and learning: Reflections on writing, reading, and society*. San Francisco, CA: Jossey-Bass.

Delpit, L. (2006). *Other people's children cultural conflict in the classroom.* New York, NY: The New Press.

Schaafsma, D. (1994*). Eating on the street: Teaching literacy in multicultural society*. Pittsburgh, PA: University of Pittsburgh Press.

Shannon, P. (2011). *Reading wide awake: Politics, pedagogies, and possibilities.* New York, NY: Teachers College Press.

Vasquez. V.M. (2014). *Negotiating critical literacies with young children.* (10th Anniversary Edition). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

III. Purpose:

The purpose of this course is to provide an overview of the social foundations of literacy within the context of sociocultural and sociopolitical theory.

Major Course Goals

Students in this course will:

1. critically read, analyze, and discuss theoretical texts, research studies, and policy reports and will participate in online discussions regarding reading.
2. write two research paper demonstrating an understanding of the sociocultural and/or sociopolitical context of literacy
3. work professionally and collaboratively with a partner to prepare a presentation demonstrating the connection between sociocultural/sociopolitical context and education practice and the role of literacy leaders in promoting culturally relevant reading instruction.

IV. Course Objectives

Through his or her assignments, a participant will complete:

A. Readings and other Media: Students enrolled in this course will complete required readings and engage in other media assigned (videos, blogs, websites, etc.).
B. Writing: Students will complete two papers. One paper will demonstrate the ability to write a "thick" description of a setting and population as preparation for thesis research. Heath's (1983) text provides a foundational understanding of this type of ethnographic writing. A second paper will demonstrate an understanding of the sociocultural and/or sociopolitical context of literacy. This paper will reflect the ability to write a research paper aligned with APA formatting guidelines.
C. Students will work collaboratively with a partner to prepare a presentation demonstrating the connection between sociocultural/sociopolitical context and education practice and the role of literacy leaders in promoting culturally relevant reading instruction.

V. Course Alignment

This course is aligned with the Mission Statement of Arkansas State University's Department of Education:

Our mission is to generate and disseminate knowledge through teaching, research, and service; and to apply that knowledge to improve education and the quality of life for all individuals in a pluralistic and democratic society. We accomplish this within student-centered, intellectually challenging environments with faculty and staff dedicated to excellence.

This course is aligned with the following frameworks and standards:

Advanced Programs Conceptual Framework
Candidate Knowledge, Skills, and Dispositions

Professional Identity: Advanced candidates demonstrate commitment through leadership and advocacy for professional practice in accordance to legal and ethical standards within a multicultural and pluralistic society.

Knowledge

- Understands ethical and legal standards.
- Understands the importance of and strategies for effective advocacy on behalf of the profession.

Skills

- Demonstrates competence in applying knowledge of content and research in professional practice.
- Promotes and applies ethical and legal standards in decision-making.
- Demonstrates professionalism in use of digital media.

Professional Dispositions

- Values the importance of professional organizations, credentialing standards, and legal and ethical standards as indicators of one's professional identity.
- Demonstrates self-efficacy by effectively reflecting on professional practice.

Diversity: Advanced candidates demonstrate in-depth understanding of and respect for diversity and its implications for learning.

Knowledge

- Understands societal factors such as gender, race, social class, ethnicity, ability, sexual orientation, age, and religion that impact student learning.

Skills

- Plans and creates experiences that help all students learn.
- Demonstrates ability to build collaborative relationships among schools, families, and communities.
- Demonstrates acceptance and respect for persons with diverse ideas, values, and behavioral practices.

Professional Dispositions

- Values and respects individuals and their differences.
- Believes all students can learn.

Advanced Knowledge and Skills: Advanced candidates demonstrate mastery of content and pedagogical knowledge and skills to apply that knowledge effectively in school settings.

Knowledge

- Knows content and concepts of the discipline at an advanced level.
- Understands the interdisciplinary nature of content and pedagogical knowledge.

Skills

- Demonstrates knowledge through inquiry, critical analysis, and synthesis of discipline-specific content.
- Shares content in challenging, clear, and compelling ways using real world contexts and integrating appropriate technologies.
- Selects and develops strategies and technologies, based on research and experience, to help all students learn.
- Reflects to enhance professional practice.

Professional Dispositions

- Values caring and supportive learning environments that encourage self-direction by all students.
- Values life-long learning and mastery of content and pedagogical knowledge.

Ecological Dimensions: Advanced candidates demonstrate understanding of influences derived from family, school, and community contexts that impact student learning and development.

Knowledge

- Understands the complexities of social systems that impact student learning.

Skills

- Demonstrates a high level of skill in identifying the human, material and technological resources necessary to be effective within their professional role.
- Demonstrates understanding of developmentally appropriate individual, family, and group strategies for working with diverse populations.

Professional Dispositions
- Values the intertwining role of family, community, and schools and their impact on student learning.
- Appreciates the uniqueness and worth of each student while recognizing the necessity for interdependent functioning and fairness to promote living together within the common society.

Evidence-Based Practices: Advanced candidates apply research-based knowledge to promote optimal development of all constituents and generate data for decision-making.

Knowledge
- Understands the relevance of research findings and performance data.

Skills
- Collects and analyzes student assessment data and makes data-driven decisions to improve student learning.
- Demonstrates ability to apply research methods and statistical techniques to improve professional practice.
- Demonstrates ability to interpret and apply research findings from professional literature.

Professional Dispositions
- Appreciates the importance of evidence-based practice.

NCTE/IRA Standards (SPA)

Standard 1 Foundational Knowledge. ***Candidates have knowledge of the foundations of reading and writing processes and instruction. As a result, candidates:***

1.1 Demonstrate knowledge of psychological, sociological, and linguistic foundations of reading and writing processes.
1.2 Demonstrate knowledge of reading research and histories of reading.
1.3 Demonstrate knowledge of language development and reading acquisition and the varieties related to cultural and linguistic diversity.
1.4 Demonstrates knowledge of the major components of reading (phonemic awareness, word identification and phonics, vocabulary and background knowledge, fluency, comprehension strategies, and motivation) in fluent reading.

Standard 2 Instructional Strategies and Curriculum Materials. ***Candidates use a wide range of instructional practices, approaches, methods, and curriculum materials to support reading and writing instruction: As a result, candidates:***

2.1 Use instructional grouping options (individual, small-group, whole-class, and computer based) as appropriate for accomplishing given purposes.
2.2 Use a wide range of instructional practices, approaches, and methods, including technology-based practices for learners at differing stages of development and from differing cultural and linguistic backgrounds.
2.3 Use a wide range of curriculum materials in effective reading instruction for learners at different stages of reading and writing development and from different cultural and linguistic backgrounds.

Standard 3 Assessment, Diagnosis, and Evaluation. ***Candidates use a variety of assessment tools and practices to plan and evaluate effective reading instruction. As a result, candidates:***

3.1 Use a wide range of assessment tools and practices that range from individual and group standardized tests to individual and group informal classroom
3.2 Place students along a developmental continuum and identify students' proficiencies and difficulties.
3.3 Use assessment information to plan, evaluate, and revise effective

instruction that meets the needs of all students, including those at different developmental stages and those from different cultural and linguistic backgrounds.

3.4 Communicate results of assessments to specific individuals (students, parents, caregivers, colleagues, administrators, policymakers, policy officials, community, etc.)

Standard 4 Creating A Literate Environment. ***Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, use of instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments. As a result, candidates:***

4.1 Use students' interests, reading abilities, and backgrounds as foundations for the reading and writing program.

4.2 Use a large supply of books, technology-based information, and nonprint materials representing multiple levels, broad interests, and cultural and linguistic backgrounds.

4.3 Model reading and writing enthusiastically as valued lifelong activities.

4.4 Motivate learners to be lifelong learners.

Standard 5 Professional Development. ***Candidates view professional development as a career-long effort and responsibility.***

5.1 Display positive dispositions related to reading and the teaching of reading.

5.2 Continue to pursue the development of professional knowledge and dispositions.

VI. Course Assessment and Performance Measures

Attendance and Professionalism

1. The decision to offer this course in a web format reflects the desire of the Department of Teacher Education to meet the needs of students who may live a substantial distance from the university and may be balancing a busy professional life with academic endeavors. There are particular challenges, however, presented in teaching and learning in an online format. In a web course you have some flexibility in when you complete your assignments. There are, nonetheless, deadlines and student performance expectations that must be honored. Please expect to dedicate the same amount of time to this course as you would in a face-to-face course. While you will not be sitting in a classroom on a weekly basis, you should expect to spend time each day engaged in reading and/or watching online videos (this is in place of time spent listening to lectures in a classroom). Assignments are in addition to this foundational work.

2. Although interaction with the instructor is limited in a web course, the instructor will be as responsive as possible through email. Therefore, based on students' responses to particular assignments and discussion forums, the instructor may exercise professional judgment regarding course delivery. That may mean revisiting particular content for clarification and altering assignments. You will receive specific information regarding assignments at the appropriate time during the course when prerequisite readings and discussions have been completed. Please don't ask to complete the assignments ahead of schedule, you never know when I will ask you to read or watch video in reference to the assignment for the month.

3. Failure to complete all assignments may result in course failure.

4. Failure to meet deadlines for assignments will negatively impact your grade. For each day an assignment is late, your grade will be reduced by 10%.

5. The platform for this course is Blackboard. You are responsible for knowing how to use Blackboard. Assistance with Blackboard is available through the ITT Center at http://www2.astate.edu/ittc/.

6. Please exercise caution regarding plagiarism. This includes answers to questions regarding assigned readings. Do not answer questions by merely copying sentences from the book. Questions are designed to assess your understanding of the materials; therefore, you should be able to construct answers without quoting text/article authors.

Performance Measures:

1) **Ways with Words" Ethnographic Quality Description. 100 pts.**

After reading Heath's text, write a 5-10 page paper in which you provide description and examples of rich description of the setting within which your thesis research will be embedded. *Ways with Words* is an iconic example of an ethnography and a hallmark feature of an ethnographic study is its use of "thick, rich, description."

While you will not be able to go into as much detail as Heath in your 5-10 page paper, this is a good exercise in envisioning your research setting and population in a meaningful way. This paper will also be useful as you write about your subjects and setting in your thesis. Guidelines for paper will be provided at a later date.

Due: Feb. 24, 2015

2) **Research Paper. 100 pts.**

Topics for your research paper will be derived from the text selected or drawn from the following list:

Brandt, D. (2001). *Literacy in American Lives.* New York, NY: Cambridge University Press.

Brandt, D. (2009). *Literacy and learning: Reflections on writing, reading, and society*. San Francisco, CA: Jossey-Bass.

Delpit, L. (2006). *Other people's children cultural conflict in the classroom.* New York, NY: The New Press.

Schaafsma, D. (1994*). Eating on the street: Teaching literacy in multicultural society*. Pittsburgh, PA: University of Pittsburgh Press.

Shannon, P. (2011). *Reading wide awake: Politics, pedagogies, and possibilities.* New York, NY: Teachers College Press.

Vasquez. V.M. (2014). *Negotiating critical literacies with young children.* (10th Anniversary Edition). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Based on the book you select to read, develop a topic that you'd like to further explore in a research paper. Guidelines for the paper will be provided at a later date.

Due March 30, 2015

3) **Collaborative Project/Presentation. 100 pts.**

For the Final of the course, you and a partner will present to the class the connection between sociocultural/sociopolitical context and education practice and the role of literacy leaders in promoting culturally relevant reading instruction. The readings and discussions in this class will prepare you for your collaboration to create your presentation, which will represent a synthesis of all that you've learned.
Guidelines for this assignment will be provided at a later date.

4) **Online Forum – 100 pts.**

You should plan to discuss the readings when we meet and in an online forum. Online discussion will reflect the readings assigned on Blackboard and the text Reframing Sociocultural Research on Literacy: Identity, Agency, and Power.

Due Randomly throughout the semester.

Flexibility Clause:
The aforementioned items on this syllabus are subject to change. Modifications in requirements, assignments, and the tentative course outline will be made as needed.

Your final grade for the course will be determined by the total points earned divided by the total points possible. For example, if you earn 350 points, your final grade for the course will be 87.5 (B).

Grading Scale: 90-100: A
80-89: B
70-79: C (if you earn a 69 or lower, you will need to retake this course)

Cheating and Plagiarism:

Arkansas State University enthusiastically promotes academic integrity and professional ethics among all members of the ASU academic community. Violations of this policy are considered as serious misconduct and may result in disciplinary action and severe penalties. (ASU Student Handbook, pp.21-22) Written assignments and test/quizzes and projects must not be copied from papers of other students, from models used by the instructor, or from published material including the internet. According to the Student Handbook, cheating and plagiarism may result in a student being asked to leave the academic community; result in a failing grade; result in failing the class and or all.

IX. Procedures to Accommodate Students with Disabilities

The Department of Teacher Education makes reasonable accommodation for qualified students with medically documented disabilities. "Students who require academic adjustments due to a disability must first register with ASU Disability Services. Following registration, and within the first two weeks of class, please contact me to discuss appropriate academic accommodations." (Disability Services website).

X. References

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print.* Cambridge, MA: MIT Press.

Beck, I., McKeown, M., & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction*. New York, NY: The Guildford Press.

Braunger, J.and Lewis, J. (2008). *Building a knowledge base in reading* (2nd Ed). IRA www.reading.org

Clark, C. H. (1995). Teaching students about reading: A fluency example. *Reading Horizons, 35*, 250-267.

Duke, N. K., & Pearson, P. D. (2002). Effective practices for developing reading comprehension. In A. Farstrup * J. Samuels (Eds.), *What research has to say about reading instruction* (pp. 205-242). Newark, DE: International Reading Association.

Fountas, I., & Pinnell, G. (1996). *Guided reading: Good first teaching for all children*. Portsmouth, NH: Heinemann.

Harvey, S., & Goudvis, A. (2000). *Strategies that work.* Portland, ME: Stenhouse.

Hindley, J. (1996). *In the company of children.* York, ME: Stenhouse.

International Reading Association (2008). www.reading.org

Kame'enui, E. J., & Carnine, D. (1998). *Effective teaching strategies that accommodate diverse learners.* Upper Saddle River, NJ: Prentice Hall.

Peterson, R. (1990). *Life in a crowded place.* Portsmouth, NH: Heinemann.

Pressley, M., & Block, C. C. (Eds.). (2001). *Comprehension instruction: Research-based best practices*. New York, NY: The Guilford Press.

Rasinski, T. V. (2003). *The fluent reader: Oral reading strategies for building word recognition.* New York, NY: Scholastic.

Routman, R. (1999). *Conversations.* Portsmouth, NH: Heinemann.

Routman, R. (2001). *Reading essentials.* Portsmouth, NH: Heinemann.

Smith, F. (1988). *Joining the literacy club*. Portsmouth, NH: Heinemann.

Strickland, D. S. (1998). *Teaching phonics today: A primer for educators.* Newark, DE: International Reading Association.

Torgesen, J. K., & Mathes, P. G. (1998). *What every teacher should know about phonological awareness.* Florida StateUniversity, Florida Department of Education.

Tovanie, C. (2000). *I read it, but I don't get it: Comprehension strategies for adolescent readers.* Portland, ME: Stenhouse Publishers.

Arkansas State University
Department of Teacher Education
RDNG 7653
Advanced Studies in Reading Comprehension
Spring

I Course Information

Professor: Kwangok Song, Ph. D.
Contact Information: (870) 680-8560; ksong@astate.edu
Office: ECB344
Class Time: Online
Location: Online
Office Hours: By Appointment

II. Course Texts and Resources

Primary Text:

Israel, S. & Duffy, G. (Eds.) (2009). *The handbook of research on reading comprehension.* Boston, MA: Routledge.

English Language Arts Common Core State Standards. (2010). Retrieved from: http://www.corestandards.org/

III. Course Description

This graduate-level course is about theories and practices of reading comprehension. Topics central to this course are related to, not limited to, reading processes, cognitive and metacognitive comprehension strategies, sociocultural contexts of reading comprehension, assessment. Students will analyze current and historical theories of reading comprehension and instructional approaches.

The purposes of the course include:

1) Analyzing current and historical perspectives on what it means to "understand," noting how research and theories on reading comprehension have changed over time; 2) Examining the varied nature of knowledge and the role lived experience plays in comprehension of texts; 3) Studying social group membership, agency and the impact of comprehension instruction on all learners; and 4) Collaboratively investigate and create professional models in comprehension instruction that transform learning environments.

IV. Course Objectives

A. Course Objectives and Outcomes

For major projects and assignments, students will: 1) participate in professional learning communities which examine historical and theoretical perspectives of comprehension and literacy learning environments ; 2) complete a "Mentor of Comprehension" paper demonstrating the implications of deep understandings to literacy instruction and a diverse constructivist perspective on comprehension; 3) demonstrate learned knowledge by creating presentations for educators focused on contemporary models of comprehension and advanced research on comprehension.

B. Program Outcomes: ASU Frameworks Linkage and NCTE/IRA

This course is aligned with current International Reading Association and NCATE-approved national literacy organization position statements and policies regarding effective reading instruction. Upon successful completion of this course, graduate students will be capable of supporting children's literacy learning and leading other educators toward effective approaches to positive literacy development and engagement supported by strong pragmatic and philosophical structures.

B. The International Reading Association standards met by this course are: 1.1, 1.2, 1.3, 2.3, 5.1, 5.2, 5.3

FOUNDATIONAL KNOWLEDGE:
From 1.1--

- Interpret major theories of reading and writing processes and development to understand the needs of all readers in diverse contexts.
- Analyze classroom environment quality for fostering individual motivation to read and write (e.g., access to print, choice, challenge, and interests).
- Demonstrate a critical stance toward the scholarship of the profession.
- Read and understand the literature and research about factors that contribute to reading success (e.g., social, cognitive, and physical).
- Inform other educators about major theories of reading and writing processes, components, and development with supporting research evidence, including information about the relationship between the culture and native language of English learners as a support system in their learning to read and write in English.

From 1.2—

- Interpret and summarize historically shared knowledge (e.g., instructional strategies and theories) that addresses the needs of all readers.
- Inform educators and others about the historically shared knowledge base in reading and writing and its role in reading education.

From 1.3—

- Model fair-mindedness, empathy, and ethical behavior when teaching students and working with other professionals.
- Communicate the importance of fair-mindedness, empathy, and ethical behavior in literacy instruction and professional behavior.

CURRICULUM AND INSTRUCTION:

From 2.1—

- Demonstrate an understanding of the research and literature that undergirds the reading and writing curriculum and instruction for all pre-K–12 students.
- Support teachers and other personnel in the design, implementation, and evaluation of the reading and writing curriculum for all students.

From 2.2—

- Use instructional approaches supported by literature and research for the following areas: concepts of print, phonemic awareness, phonics, vocabulary, comprehension, fluency, critical thinking, motivation, and writing.
- Support classroom teachers and education support personnel to implement instructional approaches for all students.
- As needed, adapt instructional materials and approaches to meet the language-proficiency needs of English learners and students who struggle to learn to read and write.

From 2.3—

- Support classroom teachers in building and using a quality, accessible classroom library and materials collection that meets the specific needs and abilities of all learners. [Reading specialists may provide support through modeling, coteaching, observing, planning, and providing resources.]

- Lead collaborative school efforts to evaluate, select, and use a variety of instructional materials to meet the specific needs and abilities of all learners.

ASSESSMENT AND EVALUATION:

From 3.2—

- Lead schoolwide or larger scale analyses to select assessment tools that provide a systemic framework for assessing the reading, writing, and language growth of all students.

DIVERSITY:

From 4.1—

- Provide differentiated instruction and instructional materials, including traditional print, digital, and online resources, that capitalize on diversity.
- Support classroom teachers in providing differentiated instruction and developing students as agents of their own literacy learning.
- Support and lead other educators to recognize their own cultures in order to teach in ways that are responsive to students' diverse backgrounds.
- Collaborate with others to build strong home-to-school and school-to-home literacy connections.
- Provide support and leadership to educators, parents and guardians, students, and other members of the school community in valuing the contributions of diverse people and traditions to literacy learning.

From 4.2—

- Provide differentiated instruction and instructional materials, including traditional print, digital, and online resources, that capitalize on diversity.
- Support classroom teachers in providing differentiated instruction and developing students as agents of their own literacy learning.
- Support and lead other educators to recognize their own cultures in order to teach in ways that are responsive to students' diverse backgrounds.

From 4.3—

- Provide students with linguistic, academic, and cultural experiences that link their communities with the school.
- Advocate for change in societal practices and institutional structures that are inherently biased or prejudiced against certain groups.
- Demonstrate how issues of inequity and opportunities for social justice activism and resiliency can be incorporated into the literacy curriculum.
- Collaborate with teachers, parents and guardians, and administrators to implement policies and instructional practices that promote equity and draw connections between home and community literacy and school literacy.

LITERATE ENVIRONMENT:

From 5.4—

- Use evidence-based grouping practices to meet the needs of all students, especially those who struggle with reading and writing.
- Support teachers in doing the same for all students.

PROFESSIONAL LEARNING AND LEADERSHIP:

From 6.1—

- Use literature and research findings about adult learning, organizational change, professional development, and school culture in working with teachers and other professionals.
- Use knowledge of students and teachers to build effective professional development programs.
- Use the research base to assist in building an effective, schoolwide professional development program.

From 6.2—

- Articulate the research base related to the connections among teacher dispositions, student learning, and the involvement of parents, guardians, and the community.
- Promote the value of reading and writing in and out of school by modeling a positive attitude toward reading and writing with students, colleagues, administrators, and parents and guardians.
- Join and participate in professional literacy organizations, symposia, conferences, and workshops.
- Demonstrate effective interpersonal, communication, and leadership skills.

From 6.3—

- Collaborate in, leading, and evaluating professional development activities for individuals and groups of teachers. Activities may include working individually with teachers (e.g., modeling, coplanning, coteaching, and observing) or with groups (e.g., teacher workshops, group meetings, and online learning).
- Demonstrate the ability to hold effective conversations (e.g., for planning and reflective problem solving) with individuals and groups of teachers, work collaboratively with teachers and administrators, and facilitate group meetings.

From 6.4—

- Demonstrate an understanding of local, state, and national policies that affect reading and writing instruction.
- Advocate with various groups (e.g., administrators, school boards, and local, state, and federal policymaking bodies) for needed organizational and instructional changes to promote effective literacy instruction.

B. Department of Teacher Education Advanced Conceptual Frameworks:

"EMPOWERING TEACHERS AS LEADERS"

1. Strengthening Pedagogy: Master's Level Candidates engage in strengthening pedagogy by providing leadership in the development, implementation and evaluation of learning experiences.

The master's level candidates strengthen pedagogy by:

- **Interpreting and applying appropriate theories and research which capitalize upon the developmental characteristics of all learners and supports instructional choices that will maximize student learning.**
- **Promoting a wide range of evidence-based instructional practices, including technology resources.**
- **Understanding the interdisciplinary nature of knowledge and making connections among content area curriculum and prior knowledge.**
- **Guiding critical dialogue of effective instructional practices which meet the varied needs of all learners.**
- **Mentoring other teachers through coaching techniques.**
- **Planning and implementing effective professional development for teachers.**
- **Sharing the research base, regardless of specialization, for the chosen curriculum and assessment methods.**
- **Promoting a student-centered, positive learning environment.**

2. Embracing Diversity: The master's level candidates embrace diversity by creating a positive learning environment that reflects an in-depth understanding of the structural factors that impact the lives of students.

The master's level candidates will help all students learn by:

- **Understanding and demonstrating sensitivity to structural factors within society that affect the learning environment such as gender, race, social class, ethnicity, ability, sexual orientation, age, and religion.**

- **Developing strategies that build positive and productive relationships between schools, families, and communities.**
- **Planning, selecting materials, and creating classroom activities that reflect an in-depth understanding of multicultural education.**
- **Creating a learning environment that facilitates an ongoing discourse on issues of diversity that affect a school culture in order to meet the changing needs of all children.**

3) Reflective Decision Making**:** The Master's Level Candidates employ reflective decision making to enhance professional performance.

The Masters Level Candidate will use reflective decision making by:

- **Determining the effectiveness of instructional practice through the appropriate use and selection of instructional assessments.**
- **Utilizing the evidence based rational for strategies used to meet the needs of all learners.**
- **Determining the impact of student developmental and cultural background on readiness to learning.**
- **Evaluating their teaching practice using current research and theory**
- **Demonstrating a sense of efficiency through the application of reflection to practice**

4) Professional Community Collaboration: The master's level candidate demonstrates a commitment to the quality of education while improving skills critical to collaborating in professional communities which include family, school, and the broader community.

The master's level candidate will model appropriate professional community collaboration by:

- **Interpreting and applying appropriate theories and research needed to perform their professional roles and to keep abreast of the field's changing base.**
- **Demonstrating a high level of skill in identifying the human, material and technological resources necessary to be effective within their professional role.**
- **Understanding the influences derived from family, school, and the broader community and how these contexts affect children's learning and development.**
- **Interacting with families and the community to improve the lives of students.**

C. ISTE Linkage

1. Technology Operations and Concepts
   a. Demonstrate introductory knowledge, skills, and understanding of concepts related to technology
2. Planning and Designing Learning Environments and Experiences
   a. Design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners
   c. Identify and locate technology resources and evaluates them for accuracy and suitability
3. Productivity and Professional Practice
   a. Use technology resources to engage in ongoing professional development and lifelong learning
   c. Apply technology to increase productivity
4. Social, Ethical, Legal, and Human Issues
   c. Identify and use technology resources that affirm diversity

D. PRAXIS Reading Specialist K-12 Connections (www.ets.org) :

I. Theoretical and Knowledge Bases of Reading

B. Demonstrate an understanding of the social, linguistic, and cultural influences on language and literacy learning

C. Demonstrate knowledge of experiences that support different stages of literacy development

E. Demonstrate an understanding of the relationships among reading, writing, speaking, and listening

F. Demonstrate knowledge of the role of the reader's prior knowledge, of the reader's social/cultural/linguistic background, and of the role of social interaction in constructing meaning

II. Application of Theoretical and Knowledge Bases of Reading in Instruction

B. Demonstrate an understanding of the relationship between reading and writing instruction and of how writing and reading support each other at different developmental levels

C. Demonstrate knowledge of how to construct instructional plans in which assessment, goals, instruction, and reassessment are connected and continuous

D. Demonstrate knowledge of explicit instructional strategies to teach students how to monitor their own word identification strategies, comprehension, and comprehension strategies

E. Demonstrate knowledge of instructional approaches to foster higher-order, critical, reflective thinking about text

G. Demonstrate an understanding of the instruction of comprehension strategies, including modeling when and how to orchestrate multiple comprehension strategies and their scaffolding

I. Demonstrate knowledge of explicit instruction and scaffolding for learning study skills and strategies (e.g., note taking and test taking)

J. Demonstrate an understanding of how literacy practices and needs differ across content areas (e.g., science, math, history, art)

K. Demonstrate an understanding of how to appropriately use texts (e.g., nonprint materials, media, trade books, textbooks, and electronic texts) within diverse genres for multiple purposes and life-long learning

L. Demonstrate knowledge of a variety of children's/adolescent's literature, including multicultural literature, and how to mediate it to enhance instruction

M. Demonstrate an understanding of how technology can be used to enhance instruction

N. Demonstrate an understanding of how to teach students to recursively apply strategies for planning, drafting, revising, and editing texts to different genres for a variety of purposes and audiences

O. Demonstrate an understanding of the purpose of publication of student writing in literacy acquisition

P. Demonstrate an understanding of deliberate vocabulary instruction across grades and content areas

Q. Demonstrate knowledge of how to plan and implement instruction that addresses the strengths and needs of all students

S. Demonstrate an understanding of instructional decisions to accommodate learners with social, cultural, linguistic, and cognitive differences

III. Application of Theoretical and Knowledge Bases of Reading in Diagnosis and Assessment

T. Demonstrate an understanding of the appropriate selection, use, and interpretation of formal assessment tools (e.g., norm-referenced tests, criterion-referenced tests, formal and informal inventories, on-demand direct writing) and teacher-developed assessment tools (e.g., constructed-response measurements, portfolio-based assessments, running records, miscue analysis, student self-evaluations, work/performance samples, observations, anecdotal records, journals) to report, evaluate and modify instruction for successful learning

IV. Reading Leadership

D. Demonstrate an understanding of culturally relevant curricular approaches to improve instruction

E. Demonstrate an understanding of the importance of school and community when promoting home-school connections

F. Demonstrate an understanding of how to promote positive and effective literacy connections between the home and the school

E. Primary Goals/Objectives of the Course

#1: Students will examine the dimensions of understanding in literacy learning

#2: Students will analyze the complexities of comprehension strategy instruction as they pertain to the learning of essential concepts

#3: Students will analyze the impact of transformative literacy learning environments and professional development for teachers.

V. Course Assessments and Performance Measures

Assignment	Points Worth	Date Due
Weekly Blackboard/Skype Participation	20points X 14 Weeks	By each Wednesday night (11:59pm)
Vocabulary Journal:	10 points X 12Wks = 120 points	By each Tuesday night (11:59pm)
Theory-into-Practice Presentation	60 points	By each assigned date
Final Synthesis Paper & Presentation	100 points (paper) 20 points (presentation)	
Total	**640 points**	

B. Class Participation (280 points)

Participation for this class is important. This is a web course that includes online participation. You are expected to attend every online meeting. If you are likely to meet the deadline for the weekly online assignment, you need to online through Wiki dialogue, your presence and thoughts are highly valued.

A. Video Conference Attendance and Class Participation (20 points/session X 7Wks = 140 points). You are expected to attend every meeting.

B. Online Attendance and Class Participation (20 points X 7 Wks = 140 points): You are responsible for attending online class sessions and for completing weekly assignments such as Bb discussion, double entry journal, Literature Circle, Text Codes, and Alpha Box. Because this class is offered as hybrid format, your completion of weekly assignments is considered as your attendance to the class. Please complete the assignments before the deadline (Each Wednesday 11:59pm). The direction for weekly assignments will be posted on Bb by Sunday. Again, no absence is granted for online meetings. If you are likely to miss the deadline for weekly assignments or online sessions, please contact the instructor in advance. Late completion of weekly assignments will be deducted 3% each day of

B. **Weekly Readings and Vocabulary Journal** (15 points X 12 Wks = 180points; 3points/vocabulary item; Each Tuesday night 11:59pm). You are expected to finish reading assigned articles and to write weekly vocabulary journal. For your journal, you will identify **5 key vocabulary items** from the assigned readings that are critical to your understanding of the ideas presented in the readings. For each vocabulary item, you will provide your definition based on the course readings. The required format is as follows:

Journal Entry Title: Author Last Name Ch. #

A. Vocabulary (p. XX): A 3-5 line succinct definition that you constructed as you read the course readings should be provided. The definition should be specific and accessible, and it should be written in your own words. The content of your definition should be informative and satisfactory. Please indicate the source of definition by citing relevant page numbers (p. XX). You can also include an example. Assigned grade for each journal entry is 10 points, and each vocabulary item is worth 2 points.

C. Theory-into-Practice Presentation (60 points)

For this assignment, you will construct a powerpoint presentation based on a chapter of your choice. You will summarize the main ideas of the article and include 3 examples of classroom practices that are closely related to the ideas. The examples can be from journal articles and/or videos of classroom practices. You are expected to present examples through various modes including images, pictures, graphics, and video clips. Before your presentation, you will discuss your ideas with the instructor. You will present your work on each video-conference session. Your presentation file should be uploaded on Bb prior to the

meeting. Your presentation will be assessed in the following manner.

- Content and organization (20 points)
- Usefulness of examples (20 points)
- Communication (10 points)
- Conference with the instructor (10 points)

The detailed rubric will be provided in class.

D. Final Synthesis Paper (100 points; Due 5/ 4)

You will write a synthesis paper in which you discuss the themes across the course readings, discussions, and presentations. In your paper, you will answer the questions as you interweave and synthesize ideas from the readings to support your argumentation. You will develop argumentation related to issues and aspects of reading comprehension. Ten double-spaced pages, excluding references (APA 6th styles is required).

E. Grading Scales

Letter	*Percentage*	Points
A	92 – 100%	588-640
B	83 – 91%	531-587
C	74 – 82%	473-530
D	66 – 73%	422-472
F	65% ↓	422↓

V. Special Considerations and/or Features of the Course

G. Students enrolling in this course must be admitted to ASU graduate school and must have received advising approval to be in the class from the Graduate Reading Coordinator.
H. Students are responsible for all assigned readings and other class materials such as power-point presentations, handouts and journal articles.
I. Students are also responsible for checking the schedule, e-mails, and Bb to be informed about the deadlines for assignments and other changes.
J. According to the Student Handbook, cheating and plagiarism may result in a student being asked to leave the academic community.
K. Students should use appropriate technology when completing projects.
L. The aforementioned requirements, assignments, policies, etc. are subject to change. Students' experiences and needs will be considered when modifying the course syllabus.
M. This course is online, so participation on Wiki/Blog's is necessary in order to reflect and interact with classmates and the instructor.
N. Unless otherwise directed, written assignments should be typed, double-spaced, in 12pt Times New Roman font on the one-inch margin paper.

V. **Procedures to Accommodate Students with Disabilities**

Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services (870-972-3964). Following registration and within the first two weeks of class, please contact me to discuss appropriate academic accommodations. Appropriate arrangements can be made to ensure equal access to this course.

If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please make an appointment to see me as soon as possible.

Schedule & Course Topics

Module	Topics	Readings	Assignment
1	Overview of the course		
2	Historical view	Ch.1	
3	Developmental Perspectives	CH.2	
4	Information-Processing	Ch.3	
5	Constructivist Perspective	Ch. 6	Presentation 1
6	Socio-cultural perspective/ /critical View	CH. 7, 8	
7	Reading comprehension strategies	Ch. 4	
8	Changing views of text and comprehension	Ch. 10	Presentation 2
9	Motivation and Reading comprehension	Ch. 14	
10	Reading Comprehension instruction	Ch. 21	Presentation 3
11	Reading Comprehension in new literacies	Ch. 12	
12	The role of discussion on reading comprehension	Ch. 22	
13	Comprehension and Cultural/linguistic diversity	Choice reading Ch. 28 or 29	Presentation 4
14	Final Paper Presentation Due		Final Presentation

Appendix B

College of Education							
Degree Plan: Specialist in Education							
Reading							
Year One		**Prerequisite**	**Credits**	**Year One**		**Prerequisite**	**Credits**
SEM 1 POT 1				**SEM 2 POT 1**			
RDNG 7653	Advanced Studies in Reading Comprehension		3	Track Course	Track Course		3
RDNG 6573	Action Research in Literacy Education		3	Track Course	Track Course		3
SEM 1 POT 2				**SEM 2 POT 2**			
Track Course	Track Course		3	RDNG 7613	Survey of Quantitative and Qualitative Literacy Research		3
RDNG 7423	Studies in Critical Literacy		3	Track Course	Track Course		3
			12				12
Year Two		**Prerequisite**	**Credits**				
SEM 1 POT 1							
RDNG 7493	Reading and Writing Capstone		3				
Track 1 Course OR Track 2 RDNG 6333	Track 1 Course or Track 2 Reading Practicum I		3				
			6				
	Total Credits		30				

Code # Enter text...

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] New Course or [ ] Experimental Course (1-time offering) (Check one box)

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Joanna Grymes 8/29/17		Rob Williams	9/22/2017
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Ron Towery	8/29/17	Mary Jane Bradley	**9/25/17** ENTER DATE...
Department Chair:		**Head of Unit (If applicable)**	
Wayne W. Wilkinson	**8/30/2017**		ENTER DATE...
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Mary Jane Bradley	**9/5/2017** ENTER DATE...		ENTER DATE...
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE...
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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1. Contact Person (Name, Email Address, Phone Number)

Dr. Ron Towery, rtowery@astate.edu 870-972-3059

2. Proposed Starting Term and Bulletin Year

Fall 2017

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)

RDNG 7423

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Studies in Critical Literacy

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Explores literacy as a critical social practice that may be used to enact social change within the classroom and beyond. Applications include the social context of literacy, multiple literacies, and the role of literacy in the production of power.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. Are there any prerequisites? No.
    a. If yes, which ones?
    b. Why or why not?

b. Is this course restricted to a specific major? Yes.
c. If yes, which major? EdS in Reading

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard Letter

10. Is this course dual listed (undergraduate/graduate)?
No.

11. Is this course cross listed? (If it is, all course entries must be identical including course descriptions. It is important to check the course description of an existing course when adding a new cross listed course.) No.

a. If yes, please list the prefix and course number of cross listed course.
b. Are these courses offered for equivalent credit?
    Please explain.

12. Is this course in support of a new program? No
    a. If yes, what program?

13. Does this course replace a course being deleted? No
    a. If yes, what course?

14. Will this course be equivalent to a deleted course? No
    a. If yes, which course?

15. Has it been confirmed that this course number is available for use? Yes.
If no: Contact Registrar's Office for assistance.

16. Does this course affect another program? No.

If yes, provide contact information from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Redefining Literacy- critical literacy pedagogy theories; defining critical literacy
Week 2: Why Critical Literacy is Necessary- Dynamic texts; texts as tools of identity formation; the mediation of identity and culture through texts
Week 3: Language and position
Week 4: Identity and Diversity
Week 5: Language and Language Varieties
Week 6: Grammar as a resource for critical literacy
Week 7: Critical visual literacy
Week 8: time, space, and bodies
Week 9: Everyday texts; analysis of books and their critical implications
Week 10: From critical awareness to social action
Week 11: Becoming Critically Aware
Week 12: Teaching Critical Literacy
Week 13: Applications of Critical Literacy as Inquiry
Week 14: Final Exam: Reflective Essay

18. Special features (e.g. labs, exhibits, site visitations, etc.) No.

19. Department staffing and classroom/lab resources
   a. Will this require additional faculty, supplies, etc.? No.

20. Does this course require course fees? No.
   If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:
   a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Adding a course in critical literacy addresses an essential need for candidates to adopt critical perspectives toward text. Multiple perspectives of pedagogical approaches to critical literacy provide a means for enhanced approaches to teaching and learning. Candidates would be encouraged to become active consumers of text that adopt critical and questioning approaches to their instructional decision-making.

   b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

Candidates are expected by our SPA accreditor, the International Literacy Association (ILA), to embody appropriate professionals dispositions towards literacy and learners. Additionally, licensed teachers are expected to demonstrate professionalism in their decision-making as well as instructional responsibilities according to the Teacher Excellence Support System (TESS). Additionally, several indicators for developing the critical dispositions characteristic of effective teachers according to the Arkansas Teaching Standards (ATS) are supported through the course content.

   c. Student population served.

This graduate course will serve students who have completed initial licensure and are completing an education specialist degree in reading.

d. Rationale for the level of the course (lower, upper, or graduate).

The content of the course is aligned to ILA standards which target reading professionals and warrant graduate level studies.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [X] Global Awareness | b. [X] Thinking Critically | c. [ ] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

International Literacy Association (ILA) Standards:

Standard 4: Diversity**:** Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

*Please note that this is a future assessment pending the approval of this proposal.

Program-Level Outcome 1 (from question #23)	Standard 4: Diversity**:** Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society.
Assessment Measure	Reflective Essay *
Assessment Timetable	This will take place at the end of the course each time it is taught.
Who is responsible for assessing and reporting on the results?	The professor on record will be responsible for administering the assessment, and the reading area group coordinator will be responsible for analyzing and reporting the results.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Candidates will recognize key principles of critical literacy in order to incorporate them into reading and writing instruction.

Which learning activities are responsible for this outcome?	The candidates will complete reading journal entries that require them to explain the principles of critical literacy and give examples of how critical literacy strategies have been incorporated into reading and/or writing lessons.
Assessment Measure	Reading journal entries submitted for scoring at the beginning and during the middle of the course.
Outcome 2	Candidates will develop understandings of the tenets critical literacy pedagogies.
Which learning activities are responsible for this outcome?	The candidates will complete reading journal entries that require them to summarize their understandings of critical literacy pedagogies.
Assessment Measure	Reading journal entries submitted for scoring at the beginning and during the middle of the course.
Outcome 3	Candidates will analyze and reflect on the relationship between instructional practices and personal biases.
Which learning activities are responsible for this outcome?	The candidates will participate in discussion boards where the instructor has provided prompts to promote discussion of and reflection on instructional practices and personal biases through the lens of critical literacy.
Assessment Measure	Discussion Boards will be submitted for scoring at the beginning and during the middle of the course.
Outcome 4	Candidates will develop recommendations for incorporating critical literacy into classroom practice.
Which learning activities are responsible for this outcome?	The candidates will complete a reflective essay that require them to provide implications of critical literacy for classroom practice and recommendations for decreasing bias within the classroom setting.
Assessment Measure	The reflective essay will be submitted for scoring at the end of the course.

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter, and selecting the text you would like to apply the change to.
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

RDNG 645V. Thesis

RDNG 6493. Advanced Reading Methods and Intervention Examines latest trends in research based reading instructional methodology and development, implementation, and mon- itoring of intervention for struggling readers. Prerequisite: RDNG 6313 theory and Practice in Teaching Reading (or equivalent); and enrollment in a Graduate Program within the College of Education.

RDNG 6513. Emergent Literacy Birth - Primary Grades Focuses on the development of literacy skills, birth through primary grades, including the process of exposure to words, print, and the opportunity to write as a part of the literacy process. This course maintains alignment with state and national standards.

RDNG 6533. Literacy for Diverse Learners Examines literacy issues in the context of multicul- tural education and culturally responsive pedagogy with a focus on the differentiation of literacy needs among various student cultures and special needs students. Presentation and rehearsal of explicit literacy instruction to enhance comprehension. Restricted to MSE Reading major or permission ofinstructor.

RDNG 6553. Adolescent Literacy Analyzes current federal initiatives and reform policies related to adolescent literacy. Examines the social and cognitive processes related to adolescent literacy. Study of methods to facilitate literacy learning for adolescents in all curricular areas. Re- stricted to MSE Reading major or permission of instructor.

RDNG 6563. Principles of Literacy Cognition An examination of current research on literacy cognition, reading disorders, and research - based methodologies for reading instruction, with implications for instruction.

RDNG 6573. Action Research in Literacy Education Examination of theory and practice in action research as applied to literacy education with practical application in literacy settings. Pre- requisite: Admission to MSE-Reading program or approval by professor; ELFN 6773: Statistics and Research.

RDNG 680V. Independent Study

RDNG 7273. Multicultural Influences in Reading and Literature Survey of contemporary literary theory and criticism including an examination of the role of multiple perspectives and di- verse voices in literature as a transformative agent in schools and society. Restricted to graduate students in education programs or permission of instructor.

RDNG 7283. Writing Pedagogy: Advanced Processes of Writing An examination of varied perspectives of the processes of writing, with a focus on recursive practices in authentic, academic, and personal settings; reflection on personal and academic writing practices and re- search of writing pedagogy facilitating the study of effective application. This course is restricted to Ed.S. degree Reading candidates or other graduate students with permission of the instructor.

RDNG 7393. Literacy Leaders as Community Advocates Examination of the role of literacy leaders within the school, community, and family context with a focus on literacy advocacy project development, implementation, and evaluation. Restricted to MSE-Reading or Ed.S.-Read- ing candidates or approval of the instructor.

RDNG 7423. Studies in Critical Literacy Explores literacy as a critical social practice that may be used to enact social change within the classroom and beyond. Applications include the social context of literacy, multiple literacies, and the role of literacy in the production of power.

RDNG 745V. Thesis Thesis is specific as the capstone for the Specialist in Education Reading (Ed.S. Reading) Program and enrollment is restricted to those students.

RDNG 7473. Theories of Language Acquisition Overview of theoretical and practical orientations regarding language acquisition with a focus on English Language Learners including an examination of language acquisition models and their application in schools and classrooms. Limited to MSE-Reading and Ed.S.-Reading students or approval of the instructor. Prerequisite: RDNG 6313 Theory and Practice in Teaching Reading (or equivalent).

RDNG 7543. New Literacies An overview of theoretical and pedagogical frameworks of the New Literacies with an emphasis on the intersection of student lives, culture, and technology. Restricted to Ed.S.-Reading Candidates or graduate students with permission of the instructor. Prerequisite: RDNG 6313 Theory and Practice in Teaching Reading (or equivalent).

Code # Enter text...

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] New Course or [ ] Experimental Course (1-time offering) (Check one box)

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Joanna Grymes	8/29/17...	Rob Williams	9/22/2017
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Ron Towery	8/29/17	Mary Jane Bradley	**9/25/17** ENTER DATE...
Department Chair:		**Head of Unit (If applicable)**	
Wayne W. Wilkinson	**8/30/2017**		ENTER DATE...
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Mary Jane Bradley	**9/5/2017** NTER DATE...		ENTER DATE...
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE...
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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1. Contact Person (Name, Email Address, Phone Number)

Dr. Ron Towery, rtowery@astate.edu 870-972-3059

2. Proposed Starting Term and Bulletin Year

Fall 2017

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)

RDNG 7493

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Reading and Writing Capstone

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

Serves as both the review and comprehensive examination of program content with a focus on developing descriptive, analytical, and reflective writings that demonstrate effective applications of practices for literacy instruction. Must be taken in final semester of coursework.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. Are there any prerequisites? Yes.
   a. If yes, which ones?
   The course must be taken during the student's final semester in the program.

b. Why or why not?

This course is restricted to Reading EdS students who have completed 24 hours of reading EdS coursework.

c. Is this course restricted to a specific major? Yes.
d. If yes, which major? EdS in Reading

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard Letter

10. Is this course dual listed (undergraduate/graduate)?
No.

11. Is this course cross listed? (If it is, all course entries must be identical including course descriptions. It is important to check the course description of an existing course when adding a new cross listed course.) No.

a. If yes, please list the prefix and course number of cross listed course.
b. Are these courses offered for equivalent credit?
   Please explain.

12. Is this course in support of a new program? No.
   a. If yes, what program?

13. Does this course replace a course being deleted? No.
   a. If yes, what course?

14. Will this course be equivalent to a deleted course? No.
   a. If yes, which course?

15. Has it been confirmed that this course number is available for use? Yes.
If no: Contact Registrar's Office for assistance.

16. Does this course affect another program? No.
If yes, provide contact information from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)
Week 1: Review of key concepts for the theoretical and evidence-based foundations of reading and writing processes and instruction
Week 2: Review of instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing
Week 3: Applied case study to review and make recommendations
Week 4: Comprehensive Exam Question #1
Week 5: Review of assessment tools and practices to plan and evaluate effective reading and writing instruction
Week 6: Review of literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society
Week 7: Applied case study to review and make recommendations
Week 8: Comprehensive Exam Question #2
Week 9: Review of the integration of foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments
Week 10: Review of professional learning and leadership as a career-long effort and responsibility
Week 11: Comprehensive Exam Question #3
Week 12: Key concepts from qualitative reading research
Week 13: Key concepts for quantitative reading research
Week 14: Comprehensive Exam Question #4

18. Special features (e.g. labs, exhibits, site visitations, etc.) No.

19. Department staffing and classroom/lab resources
a. Will this require additional faculty, supplies, etc.? No.

20. Does this course require course fees? No.
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:
a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Adding this course addresses the need for a comprehensive, culminating course where candidates must demonstrate their ability to apply knowledge of literacy and effective instructional decision-making.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

As required by our SPA accreditor, the International Literacy Association (ILA), candidates must demonstrate their content knowledge in the form of an exam in reading education. This Capstone course will be the venue by which students are able to demonstrate their competencies in a written comprehensive examination format.

c. Student population served.

is graduate course will serve students who have completed the coursework outlined in their degree plans for the reading

education specialist degree.

d. Rationale for the level of the course (lower, upper, or graduate).

Both the nature of the course, a comprehensive exam, and the content of the course which is aligned to ILA standards for reading professionals warrant graduate level studies.

University Outcomes

Assessment

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [ ] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course?

ILA Standards

Standard 1: Foundational Knowledge: Reading Specialist/Literacy Coach candidates understand the theoretical and evidence-based foundations of reading and writing processes and instruction.
Standard 2: Curriculum and Instruction**:** Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing.
Standard 3: Assessment and Evaluation**:** Candidates use a variety of assessment tools and practices to plan and evaluate effective reading and writing instruction.
Standard 4: Diversity**:** Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society.
Standard 5: Literate Environment**:** Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments.
Standard 6: Professional Learning and Leadership**:** Candidates recognize the importance of, demonstrate, and facilitate professional learning and leadership as a career-long effort and responsibility.

Where will this course fit into an already existing program assessment process?

This course will replace the stand-alone comprehensive exam assessment in which students demonstrate their ability to apply content knowledge of standards that were already assessed throughout the program.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	Standard 1: Foundational Knowledge: Reading Specialist/Literacy Coach candidates understand the theoretical and evidence-based foundations of reading and writing processes and instruction. Standard 2: Curriculum and Instruction**:** Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing. Standard 3: Assessment and Evaluation**:** Candidates use a variety of assessment tools and practices to plan and evaluate effective reading and writing instruction. Standard 4: Diversity**:** Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society. Standard 5: Literate Environment**:** Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments. Standard 6: Professional Learning and Leadership**:** Candidates recognize the importance of, demonstrate, and facilitate professional learning and leadership as a career-long effort and responsibility.
Assessment Measure	A series of comprehensive exam questions.
Assessment Timetable	These will take place during the middle and at the end of the course.
Who is responsible for assessing and reporting on the results?	The professor on record will be responsible for administering the assessment, and the reading area group coordinator will be responsible for analyzing and reporting the results.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Candidates will create study guides, outlines, or reflective journal entries in order to synthesize the theoretical and evidence-based foundations of reading and writing processes and instruction.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A personal study guide, outline, or reflective summary journal entry
Outcome 2	Candidates will create study guides, outlines, or other review tools in order to synthesize the tenets of instructional approaches, materials, and an integrated, comprehensive, balanced curriculum that supports student learning in reading and writing.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A personal study guide, outline, or reflective summary journal entry
Outcome 3	Candidates will create study guides, outlines, or other review tools in order to synthesize the use of a variety of assessment tools and practices that could be used to plan and evaluate effective reading and writing instruction.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.

Assessment Measure	A series of comprehensive exam questions.
Outcome 4	Candidates will create study guides, outlines, or other review tools in order to synthesize their understandings of how awareness, understanding, respect, and valuing of differences in our society impacts literacy development.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A series of comprehensive exam questions.
Outcome 5	Candidates will create study guides, outlines, or other review tools in order to synthesize their understandings of integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments for creating a literate environment.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A series of comprehensive exam questions.
Outcome 6	Candidates will create study guides, outlines, or other review tools in order to synthesize their understandings of professional learning and leadership as a career-long effort and responsibility.
Which learning activities are responsible for this outcome?	The candidates will review a series of applied literacy case studies and/or scenarios in order to synthesize their applied understandings of the content knowledge acquired in an essay format.
Assessment Measure	A series of comprehensive exam questions.

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

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Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

RDNG 645V. Thesis

RDNG 6493. Advanced Reading Methods and Intervention Examines latest trends in research based reading instructional methodology and development, implementation, and mon- itoring of intervention for struggling readers. Prerequisite: RDNG 6313 theory and Practice in Teaching Reading (or equivalent); and enrollment in a Graduate Program within the College of Education.

RDNG 6513. Emergent Literacy Birth - Primary Grades Focuses on the development of literacy skills, birth through primary grades, including the process of exposure to words, print, and the opportunity to write as a part of the literacy process. This course maintains alignment with state and national standards.

RDNG 6533. Literacy for Diverse Learners Examines literacy issues in the context of multicul- tural education and culturally responsive pedagogy with a focus on the differentiation of literacy needs among various student cultures and special needs students. Presentation and rehearsal of explicit literacy instruction to enhance comprehension. Restricted to MSE Reading major or permission ofinstructor.

RDNG 6553. Adolescent Literacy Analyzes current federal initiatives and reform policies related to adolescent literacy. Examines the social and cognitive processes related to adolescent literacy. Study of methods to facilitate literacy learning for adolescents in all curricular areas. Re- stricted to MSE Reading major or permission of instructor.

RDNG 6563. Principles of Literacy Cognition An examination of current research on literacy cognition, reading disorders, and research - based methodologies for reading instruction, with implications for instruction.

RDNG 6573. Action Research in Literacy Education Examination of theory and practice in action research as applied to literacy education with practical application in literacy settings. Pre- requisite: Admission to MSE-Reading program or approval by professor; ELFN 6773: Statistics and Research.

RDNG 680V. Independent Study

RDNG 7273. Multicultural Influences in Reading and Literature Survey of contemporary literary theory and criticism including an examination of the role of multiple perspectives and di- verse voices in literature as a transformative agent in schools and society. Restricted to graduate students in education programs or permission of instructor.

RDNG 7283. Writing Pedagogy: Advanced Processes of Writing An examination of varied perspectives of the processes of writing, with a focus on recursive practices in authentic, academic, and personal settings; reflection on personal and academic writing practices and re- search of writing pedagogy facilitating the study of effective application. This course is restricted to Ed.S. degree Reading candidates or other graduate students with permission of the instructor.

RDNG 7393. Literacy Leaders as Community Advocates Examination of the role of literacy leaders within the school, community, and family context with a focus on literacy advocacy project development, implementation, and evaluation. Restricted to MSE-Reading or Ed.S.-Read- ing candidates or approval of the instructor

RDNG 745V. Thesis Thesis is specific as the capstone for the Specialist in Education Reading (Ed.S. Reading) Program and enrollment is restricted to those students.

RDNG 7473. Theories of Language Acquisition Overview of theoretical and practical orientations regarding language acquisition with a focus on English Language Learners including an examination of language acquisition models and their application in schools and classrooms. Limited to MSE-Reading and Ed.S.-Reading students or approval of the instructor. Prerequisite: RDNG 6313 Theory and Practice in Teaching Reading (or equivalent).

RDNG 7493 Reading and Writing Capstone **Serves as both the review and comprehensive examination of program content with a focus on developing descriptive, analytical, and reflective writings that demonstrate effective applications of practices for literacy instruction. Must be taken in final semester of coursework.**

RDNG 7543. New Literacies An overview of theoretical and pedagogical frameworks of the New Literacies with an emphasis on the intersection of student lives, culture, and technology. Restricted to Ed.S.-Reading Candidates or graduate students with permission of the instructor. Prerequisite: RDNG 6313 Theory and Practice in Teaching Reading (or equivalent).

Code # Enter text...

Course Deletion Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Warren Johnson	9/12/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Janelle Collins	9/12/2017		ENTER DATE
Department Chair:		**Head of Unit (If applicable)**	
Warren Johnson	9/22/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Gina Hogue	9/25/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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1. Course Title, Prefix and Number
FR 560V, Special Project in Teaching
SPAN 560V, Special Project in Teaching

2. Contact Person (Name, Email Address, Phone Number)
Warren Johnson, Dept. of English, Philosophy, and World Languages, wjohnson@astate.edu, 972-2103

3. Last semester course will be offered
last offered many years ago
Please clarify by selecting one of the following:

a. [X] Remove from bulletin for Fall of 2018-2019
b. [ ] Other -

4. Student Population

a. The course was initially created for what student population?
unknown

b. How will deletion of this course affect those students?
none, since courses have not been used in years

College, Departmental, or Program Changes

5. a. How will this affect the college, department, and/or program?
no effect

b. Does this program and/or course affect another department? **No**
If yes, please provide contact information from the Dean, Department Head, and/ or Program Director whose area this affects.

c. Please provide a short justification for why this course being deleted from program.
no demand

6. Is there currently a course listed in the bulletin which is equivalent to this one? No
If yes, which course(s)?

7. Will this course be equivalent to a new course? No
If yes, what course?

Revised 7/6/2016

Bulletin Changes

Instructions

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- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

Graduate Bulletin 2017-2018, p. 342

DEPARTMENT OF WORLD LANGUAGES AND CULTURES French (FR)

FR 5503. Special Topics Advanced study in a genre, movement, author, culture or other specialized topics. May be repeated when topic changes. Prerequisite: permission of professor.

~~**FR 560V. Special Project in Teaching** An independent study and practical application of selected professional topics in language teaching. May not be used to satisfy any degree requirements. Prerequisite: BSE majors only with at least 21 hours above FR 2023 and permission of professor.~~

FR 680V. Independent Study

Spanish (SPAN)

SPAN 5503. Special Topics Intensive study of a theme, motif, literary movement, genre, author, or a significant feature of several works of Spanish literature. May be repeated when topic changes. Prerequisite: SPAN 3413 or permission of professor.

~~**SPAN 560V. Special Project in Teaching** An independent study of selected professional topics in language teaching. This course may not be used to satisfy any degree requirements. May be repeated for up to six hours credit. Prerequisite: BSE majors only with at least 21 hours above SPAN 2023 and permission of professor.~~

SPAN 680V. Independent Study

Code # Enter text...

Bulletin / Banner Change Transmittal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

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Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Dr. Robert Bradley	8/29/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Dr. Robert Bradley	8/29/2017		ENTER DATE
Department Chair:		**Head of Unit (If applicable)**	
Deanna Barymon	10/5/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Susan Hanrahan	10/5/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

1.Contact Person (Name, Email Address, Phone Number)
Dr. Robert Bradley, rbradley@astate.edu, 972-3766

2.Proposed Change
Change the description of the major on page 216 as well as add in a section referring to accreditation standing on the same page or page 217.

3.Effective Date
Fall 2017

4.Justification – *Please provide details as to why this change is necessary.*
The change in description will help reduce some confusion concerning when the program is to begin. For accreditation, the additions are to match the wording the accreditation body requires for schools seeking program accreditation but have yet to obtain it.

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Bulletin Changes

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Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

Program of Study for the Master of Athletic Training Degree
The Master of Athletic Training (MAT) program at Arkansas State University will seek accreditation from the Commission on Accreditation of Athletic Training Education (CAATE) in 2017-2018. In 2022, the Master of Athletic Training program will be the current level of study required to meet the latest standards as set forth by the Commission on Accreditation of Athletic Training Education. This program is designed so that a bachelor's degree and prerequisite coursework are completed prior to the start of professional coursework. Once accepted to the program, students attend full time for 2 years to complete the AT degree. Graduate level study will provide an educational framework that prepares students to be successful as athletic trainers. It will provide the foundation that allows clinicians to adapt to the changing face of healthcare and to be positioned as a healthcare provider who significantly improve the health and well-being of their patients and have meaningful, purposeful career paths.
ADMISSION REQUIREMENTS All applicants must have a bachelor's degree. No particular field of study is required; however students are encouraged to select undergraduate majors consistent with their individual abilities and interests. Required courses in some majors such as biology and exercise science are more consistent with the MAT pre-requisite requirements.
APPLICATIONS DEADLINES The deadline for submitting applications to ATCAS and to A-State Admissions is February 1st.
PREREQUISITES Satisfactory completion with a letter grade of B or higher are required for admission to the MAT program. • Medical terminology • Anatomy & Physiology I & II (4 credits each- must include labs) • Chemistry • Physics I (4 credits- must include lab) • Biology • Psychology • Statistics • Kinesiology and/or Biomechanics
Students are encouraged to complete additional preparation courses in the hard sciences beyond the MAT prerequisites to receive additional weighting credit in the application scoring process. Students are also encouraged to complete related specialty certifications such as Emergency Medical Technician, Teaching Certification, Strength and Conditioning Specialist, Corrective Exercise Specialist or Casting Certification prior to the start of the MAT program which will enhance the admissions score. Spanish proficiency also adds points to the overall scoring total.
APPLICATION REQUIREMENTS Arkansas State University's MAT program subscribes to Athletic Training Centralized Application Service (ATCAS). Applicants for admission to the A-State MAT program MUST apply online using the ATCAS

Please note – any change to course number or course prefix should utilize the 'Course Deletion' form.

application. In addition, students must also submit an application to Graduate Admissions within the Office of Admissions, Records, and Registration. Transcripts must be sent to both ATCAS and Graduate Admissions.
ATCAS application: http://caate.net/apply-now/
Graduate Admissions: http://www.astate.edu/info/admissions/graduate/how-to-apply/
Once a student has submitted an application through ATCAS, a review of materials will be completed by athletic training faculty. This typically will occur after March 1st
COURSE REQUIREMENTS A minimum of 65 graduate course hours are required for the Master of Athletic Training Program.
LICENSURE/CERTIFICATION REQUIREMENTS FOR STUDENT ENTRY INTO THE FIELD The State of Arkansas requires individuals to possess the national certification by the Board of Certification (BOC) prior to issuing a permanent license to practice athletic training. Students graduating from a Commission on Accreditation of Athletic Training Education (CAATE) accredited program are eligible to take the BOC exam.

ACCREDITATION Arkansas State University is currently seeking accreditation for our new Athletic Training program and is not accredited by the Commission on Accreditation of Athletic Training Education (CAATE). The institution will be submitting a self-study to begin the accreditation process on July 1, 2019. Submission of the self-study and completion of a site visit does not guarantee that the program will become accredited. Students that graduate from the program prior to accreditation WILL NOT be eligible to sit for the credentialing examination for athletic trainers and will not be eligible for licensure in most states.

Please note – any change to course number or course prefix should utilize the 'Course Deletion' form.

Code # Enter text...

Course Deletion Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

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Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Kristie Vinson	9/6/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Shawn Drake	10/5/2017		ENTER DATE
Department Chair:		**Head of Unit (If applicable)**	
Deanna Barymon	10/5/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Susan Hanrahan	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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1. Course Title, Prefix and Number
PT 7323, Imaging and Pharmacology

2. Contact Person (Name, Email Address, Phone Number)
Kristie Vinson, kvinson@astate.edu, 870-972-3236

3. Last semester course will be offered
Course is not currently being offered
Please clarify by selecting one of the following:

a. [X] Remove PT 7323, Imaging and Pharmacology from bulletin for Fall of 2017
b. [ ] Other -

4. Student Population

a. The course was initially created for what student population?
Initially created in DPT program, but was modified. The course continued to be offered in the tDPT program, but that program has now ended.

b. How will deletion of this course affect those students?
Will not adversely affect any students.

College, Departmental, or Program Changes

5. a. How will this affect the college, department, and/or program?
No impact on the department, college, or program.

b. Does this program and/or course affect another department? No
If yes, please provide contact information from the Dean, Department Head, and/ or Program Director whose area this affects.

c. Please provide a short justification for why this course being deleted from program.
The program is no longer being offered.

6. Is there currently a course listed in the bulletin which is equivalent to this one? No
If yes, which course(s)?

7. Will this course be equivalent to a new course? No
If yes, what course?

Revised 7/6/2016

Bulletin Changes

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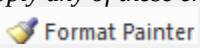
You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon →  *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

p. 358

~~**PT 7323. Imaging and Pharmacology** An overview of radiologic imagine and pharmacology in physical therapy practice, with the radiology portion covering the indications, uses, limitations and advantages of imaging techniques, and the pharmacology portion covering the pharmacokinetics and pharmacodynamics of various pharmacologic interventions.~~

Code # Enter text...

Course Deletion Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

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Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Kristie Vinson	9/6/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Shawn Drake	10/5/2017		ENTER DATE
Department Chair:		**Head of Unit (If applicable)**	
Deanna Barymon	10/5/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Susan Hanrahan	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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1. Course Title, Prefix and Number
PT 7512 Professional Issues I

2. Contact Person (Name, Email Address, Phone Number)
Kristie Vinson, kvinson@astate.edu, 870-972-3236

3. Last semester course will be offered
Course is not currently being offered
Please clarify by selecting one of the following:

a. [X] Remove PT 7512, Professional Issues I from bulletin for Fall of 2017
b. [ ] Other -

4. Student Population

a. The course was initially created for what student population?
Initially created in DPT program, but was modified. The course continued to be offered in the tDPT program, but that program has now ended.

b. How will deletion of this course affect those students?
Will not adversely affect any students.

College, Departmental, or Program Changes

5. a. How will this affect the college, department, and/or program?
No impact on the department, college, or program.

b. Does this program and/or course affect another department? No
If yes, please provide contact information from the Dean, Department Head, and/ or Program Director whose area this affects.

c. Please provide a short justification for why this course being deleted from program.
The program is no longer being offered.

6. Is there currently a course listed in the bulletin which is equivalent to this one? No
If yes, which course(s)?

7. Will this course be equivalent to a new course? No
If yes, what course?

Revised 7/6/2016

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

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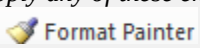
You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon →  *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

p. 358

~~**PT 7512. Professional Issues I: Introduction to DPT Practice** Explores contemporary issues in physical therapy. Special emphasis is placed on ethical and legal dilemmas faced by physical therapists working in the clinical environment. Restricted to tDPT majors.~~

Code # Enter text...

Course Revision Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

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Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Kristie Vinson 8/30/2017
Department Curriculum Committee Chair

Enter date...
COPE Chair (if applicable)

Shawn Drake 10/5/2017 Enter date...
Department Chair:

Enter date...
Head of Unit (If applicable)

Deanna Barymon 10/5/2017
College Curriculum Committee Chair

Enter date...
Undergraduate Curriculum Council Chair

Susan Hanrahan 10/6/2017
College Dean

Enter date...
Graduate Curriculum Committee Chair

Enter date
General Education Committee Chair (If applicable)

Enter date...
Vice Chancellor for Academic Affairs

---

1. Contact Person (Name, Email Address, Phone Number)
Kristie Vinson, kvinson@astate.edu, 972-3236

2. Proposed Starting Term and Bulletin Year for Change to Take Effect
Spring 2018

3. Current Course Prefix and Number
PT 818V

3.1 – [Yes] Request for Course Prefix and Number change

If yes, include new course Prefix and Number below. *(Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. Proposed number for experimental course is 9.)*

PT 8191

3.2 – If yes, has it been confirmed that this course number is available for use? Yes

If no: Contact Registrar's Office for assistance.

4. Current Course Title

Independent Study and Culminating Experience

4.1 – [Yes] Request for Course Title Change

If yes, include new Course Title Below. *If title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).*

Culminating Experience

5. – [Yes] Request for Course Description Change.

If yes, please include brief course description (40 words or fewer) as it should appear in the bulletin.

This is a culminating experience designed to meet the individual needs of the student. The course work is designed on an individual basis to prepare students for the physical therapist national licensure examination.

6. – [No.] Request for prerequisites and major restrictions change.

(If yes, indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. Are there any prerequisites?
    a. If yes, which ones?
    b. Why or why not?

b. Is this course restricted to a specific major? Yes
    a. If yes, which major? Doctor of Physical Therapy

7. – [No] Request for Course Frequency Change (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

a. If yes, please indicate new frequency:

8. – [Yes] Request for Class Mode Change

If yes, indicate if this course will be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Seminar

9. – [No] Request for grade type change

If yes, what is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

10. Is this course dual listed (undergraduate/graduate)? No

a. If yes, indicate course prefix, number and title of dual listed course.

11. Is this course cross listed? No
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

a. If yes, please list the prefix and course number of cross listed course.
b. Are these courses offered for equivalent credit?
Please explain.

12. Is this course change in support of a new program? No
a. If yes, what program?

13. Does this course replace a course being deleted? No
a. If yes, what course?
Enter text...

14. Will this course be equivalent to a deleted course or the previous version of the course? Yes
a. If yes, which course?
PT 818V

15. Does this course affect another program? No
If yes, provide contact information from the Dean, Department Head, and/or Program Director whose area this affects.

16. Does this course require course fees? No
If yes: Please attach the New Program Tuition and Fees form, which is available from the UCC website.

Revision Details

17. Please outline the proposed revisions to the course.
Include information as to any changes to course outline, special features, required resources, or in academic rationale and goals for the course.

This course is a culminating experience course. The students meet in person at the beginning of the semester as well as at the end of the term. This is not an online only course, nor is it a true independent study. Students complete licensure board examination preparation for the course. The name change to the course is to reflect that the course is a culminating experience for students in the Doctor of Physical Therapy program. The mode of delivery is to be web-assisted, rather than online.

18. Please provide justification to the proposed changes to the course.

Students are required to meet on campus at the beginning and end of the semester. Classifying it as web-assisted rather than online is more representative of the course.

19. Do these revisions result in a change to the assessment plan?
[No.]
**If yes: Please complete the Assessment section of the proposal on the next page.*
**If no: Skip to Bulletin Changes section of the proposal.*

See question 19 before completing the Assessment portion of this proposal.

Assessment

University Outcomes

20. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [ ] Thinking Critically | c. [ ] Information Literacy

Relationship with Current Program-Level Assessment Process

21. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

22. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	
Assessment Measure	
Assessment Timetable	
Who is responsible for assessing and reporting on the results?	Who (person, position title, or internal committee) is responsible for assessing, evaluating, and analyzing results, and developing action plans?

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

23. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	
Which learning activities are responsible for this outcome?	
Assessment Measure	What will be your assessment measure for this outcome?

(Repeat if needed for additional outcomes)

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Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

Physical Therapy (cont.)

Doctor of Physical Therapy

	Sem. Hrs.
Fall, Year 3	
PT 7343, Administration	3
~~PT 818V, Independent Study & Culminating Experience~~ PT 8191, Culminating Experience	1
PT 8571, Research III	1
PT 8573, Special Topics in Physical Therapy	3
PT 8674, Musculoskeletal III	4
PT 8774, Neuromuscular IV	4
PT 8872, Clinical Decision Making	2
Sub-total	**18**
Spring, Year 3	**Sem. Hrs.**
PT 8585, Clinical Education IV	5
PT 8685, Clinical Education V	5
Sub-total	**10**
Total Required Hours:	**108**

The bulletin can be accessed at http://www.astate.edu/a/registrar/students/

PT 7534. Clinical Procedures: Introductory Tests, Measures and Interventions Tests and measures of range of motion, muscle performance, posture, gait & balance are introduced. The clinical intervention procedure introduced is therapeutic exercise covering basic principles and techniques of flexibility exercises; strength and power exercises; and aerobic exercises. Restricted to Doctor of Physical Therapy majors.

PT 7612. Methods of Instruction and Consultation This course addresses the role of the therapist as educator, with emphasis on principles and methods of effective instruction, feedback, and consultation along with the various forms of educational and instructional technologies. Restricted to Doctor of Physical Therapy majors.

PT 7724. Integumentary and Physical Agents Introduction to the theory and application of thermal modalities and electrotherapy in clinical practice. Includes assessment and treatment of conditions related to the integument that would be amenable to physical agents as part of the treatment plan. Restricted to Doctor of Physical Therapy majors.

PT 7733. Clinical Education I One of a series of supervised clinical education courses, which provides students an opportunity to integrate previously learned academic coursework into actual clinical practice, culminating with entry level performance at conclusion of all clinical education courses. Restricted to Doctor of Physical Therapy majors.

PT 7753. Clinical Exercise Physiology Focus on exercise testing and prescription in healthy populations and individuals with chronic disease. Students will be introduced to concepts of wellness as a foundation for treating chronic health conditions. Restricted to Doctor of Physical Therapy majors.

PT 7832. Healthy Ager Interprofessional Education An interprofessional, service learning approach to enhance student learning in the area of geriatrics. Restricted to Doctor of Physical Therapy majors.

PT 8143. Neuromuscular I Theoretical foundations of neuromuscular rehabilitation including normal and abnormal movement, neuroplasticity, motor control, and motor learning. Basic treatment principles are introduced. Restricted to Doctor of Physical Therapy majors.

PT 8151. Research II The second of three mentored research courses designed to culminate in a project suitable for presentation or publication. Students will continue developing projects related to the faculty advisor's area of knowledge and interest. Restricted to Doctor of Physical Therapy majors.

PT 8163. Clinical Education II One of a series of supervised clinical education courses, which provides students an opportunity to integrate previously learned academic coursework into actual clinical practice, culminating with entry level performance at conclusion of all clinical education courses. Restricted to Doctor of Physical Therapy majors.

~~**PT 818V. Independent Study and Culminating Experience** This is an independent study that is designed to meet the individual needs of the student. The course work is designed on an individual basis. Restricted to Doctor of Physical Therapy majors.~~

PT 8191, Culminating Experience. This is a culminating experience designed to meet the individual needs of the student. The course work is designed on an individual basis to prepare students for the physical therapist national licensure examination. Restricted to Doctor of Physical Therapy majors.

PT 8245. Musculoskeletal I Management of musculoskeletal cases of the upper and lower extremities incorporating anatomy, biomechanics, pathology, clinical diagnosis, and intervention. Emphasis is on clinical decision making in all patient-therapist interaction. Education, prevention, ergonomics, pain management, and conditioning also covered. Restricted to Doctor of Physical Therapy majors.

PT 8255. Musculoskeletal II Management of musculoskeletal cases of the spine and TMJ incorporating anatomy, biomechanics, pathology, clinical diagnosis, and intervention. Emphasis is on clinical decision making in all patient-therapist interaction. Education, prevention, ergonomics, pain management, and conditioning also covered. Restricted to Doctor of Physical Therapy majors.

PT 8263. Clinical Education III One of a series of supervised clinical education courses, which provides students an opportunity to integrate previously learned academic coursework into actual clinical practice, culminating with entry level performance at conclusion of all clinical education courses. Restricted to Doctor of Physical Therapy majors.

Code # Enter text...

Program, Minor, or Emphasis Deletion Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Kristie Vinson	9/6/2017
Department Curriculum Committee Chair	

	ENTER DATE
COPE Chair (if applicable)	

Shawn Drake	10/5/2017
Department Chair:	

	ENTER DATE
Head of Unit (If applicable)	

Deanna Barymon	10/5/2017
College Curriculum Committee Chair	

	ENTER DATE
Undergraduate Curriculum Council Chair	

Susan Hanrahan	10/6/2017
College Dean	

	ENTER DATE
Graduate Curriculum Committee Chair	

	ENTER DATE
General Education Committee Chair (If applicable)	

	ENTER DATE
Vice Chancellor for Academic Affairs	

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1. Title of Program, Minor, or Emphasis
Transitional Doctor of Physical Therapy

2. Contact Person (Name, Email Address, Phone Number)
Kristie Vinson, kvinson@astate.edu 972-3236

3. Last semester program/minor/emphasis will be offered
Fall 2017
Please clarify by selecting one of the following:

a. [X] Remove Program from bulletin for Fall of 2017
b. [ ] Other -

4. Student Population

a. The was initially created for what student population?
Working physical therapists with a bachelor's or master's degree wishing to earn an entry-level doctoral degree in physical therapy. This program was created knowing that it would only run for a few years to allow previous graduates to "level-up" their degrees.

b. How will deletion of this program affect those students?
Working PTs will have to consider other options for a transitional DPT degree.

College, Departmental, or Program Changes

5. a. How will this affect the college, department, and/or program?
The deletion of this program will not adversely impact the Department of Physical Therapy. The tDPT courses had very small enrollments and no faculty were specifically designated to the tDPT program. The PT Dept. nor the College of Nursing and Health Professions will be negatively impacted.

b. Does this program/minor/emphasis affect another department? No
If yes, please provide contact information from the Dean, Department Head, and/ or Program Director whose area this affects.

c. Please provide a short justification for why this program/minor/emphasis is being deleted from program.
Diminishing student interest; set-up as a temporary program, and it has now run its course.

6. Is there currently a program/minor/emphasis listed in the bulletin which is equivalent to this one? No
If yes, which program/minor/emphasis(s)?

7. Will this current program/minor/emphasis be equivalent to a new program/minor/emphasis? No
If yes, what program/minor/emphasis?
n/a

Revised 7/6/2016

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

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GRADUATE DEGREE PROGRAMS

Arkansas State University offers work leading to the following graduate degrees with major fields of emphasis as indicated:

DOCTORAL DEGREES

Doctor of Philosophy (Ph.D.)

Environmental Sciences
Heritage Studies
Molecular Biosciences

Doctor of Education (Ed.D)

Educational Leadership

Doctor of Nursing Practice (DNP)

Doctor of Occupational Therapy (OTD)

Doctor of Physical Therapy (DPT)

~~**Transitional Doctor of Physical Therapy (tDPT)**~~

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College of Nursing and Health Professions

The College of Nursing and Health Professions offers a number of graduate level programs: the Master of Athletic Training (M.A.T.), the Master of Communication Disorders (M.C.D.), the Graduate Certificate in Healthcare Emergency Management, the Master of Science in Disaster Preparedness and Emergency Management (M.S.), the Master of Science in Health Sciences (M.S.H.S.), the Graduate Certificate in Addiction Studies, the Graduate Certificate in Aging Studies, the Graduate Certificate in Health Care Management, the Graduate Certificate in Health Sciences Education, the Graduate Certificate in Nurse Educator, the Master of Science in Nursing (M.S.N.), the Master of Science in Nursing in Nurse Anesthesia (M.S.N.), the Master of

Science in Nursing in Family Nurse Practitioner (M.S.N.), the Doctor of Nursing Practice (D.N.P.), the Doctor of Occupational Therapy (O.T.D.), the Doctor of Physical Therapy (D.P.T.), the Transitional Doctor of Physical Therapy (t.D.T.P.), and the Master of Social Work (M.S.W.).

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Program of Study for the Transitional Doctor of Physical Therapy

The transitional Doctor of Physical Therapy degree (tDPT) provides a program of study that bridges the educational gap between bachelors and masters degree entry-level practitioners in physical therapy and Doctor of Physical Therapy entry-level graduates. The Doctor of Physical Therapy (DPT) is the preferred degree by the Commission on Accreditation in Physical Therapy Education (CAPTE) and the American Physical Therapy Association's (APTA) and it reflects the current level of study that is required to meet the latest standards for physical therapy education. The tDPT program is designed specifically for practicing physical therapy professionals who earned their entry level professional degree at the masters or bachelor degree level. The primary purpose of A-State's tDPT program is to serve our Physical Therapy alumni interested in attaining the doctor of physical therapy degree. Masters and bachelors level physical therapists from other programs may also apply for admission.

ADMISSION REQUIREMENTS

Earned Master of Physical Therapy degree; currently licensed and practicing as a physical therapist; physical therapy license history must not include licensure revocations or other disciplinary sanctions. Applicants with earned Bachelor of Physical Therapy degree will be considered for admission but additional clinical experience and/or graduate coursework will be required for tDPT graduation.

APPLICATION DEADLINES

Application deadline is May 1. Students may acquire detailed information about the application process by contacting the Department of Physical Therapy at 870-972-3591 or by visiting the department's website at http://www.astate.edu/conhp/pt.

THE D.P.T. DEGREE AND PHYSICAL THERAPY LICENSURE

Licensure to practice physical therapy is granted by the individual states and issued on scores obtained on the National Licensing Examination administered by the Federation of State Boards of Physical Therapy. Graduation from an accredited physical therapist educational program with a doctorate, master's or bachelor's degree is a prerequisite to sit for the licensing exam. Students enrolled in the tDPT program are expected to hold and maintain an active physical therapy license in good standing and to continue to practice throughout the course of the program.

COURSE REQUIREMENTS

The tDPT consists of 28 semester credits for students with an earned Master of Physical Therapy degree. Additional semester credits are required for students who earned the Bachelor of Physical Therapy degree. The courses are a mixture of didactic and clinically applied learning experiences. The descriptions of required courses appear below. 215

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The bulletin can be accessed at http://www.astate.edu/a/registrar/students/

Physical Therapy

Transitional Doctor of Physical Therapy

University Requirements:

See Graduate Degree Policies for additional information (p. 35)

Program Requirements:

tDPT students enroll in two sections of PT 8573, for a total of six credits.

tDPT students enroll in three sections of PT 818V, for a total of three credits.

Fall, Year 1	**Sem. Hrs.**
PT 7512, Professional Issues I	2
PT 7612, Methods of Instruction and Consultation	2
Sub-total	**4**
Spring, Year 1	**Sem. Hrs.**
PT 7123, Introduction to Research and Evidence Based Practice	3
Summer, Year 1	**Sem. Hrs.**
PT 7413 Pathophysiology and Differential Diagnosis	3
Fall, Year 2	**Sem. Hrs.**
PT 8573, Special Topics in Physical Therapy	3
Spring, Year 2	**Sem. Hrs.**
PT 7252, Psychosocial Issues in Physical Therapy	2
Summer, Year 2	**Sem. Hrs.**
PT 7323, Imaging and Pharmacology	3
Fall, Year 3	**Sem. Hrs.**
PT 8872, Clinical Decision Making	2
PT 8573, Special Topics in Physical Therapy	3
Sub-total	**5**
Spring, Year 3	**Sem. Hrs.**
PT 818V, Independent Study and Cumulating Experience	3
Total Required Hours:	**26**

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LETTER OF NOTIFICATION – 5

DELETION

(Certificate, Degree, Option/Emphasis/Concentration, Organizational Unit)

1. Institution submitting request: *Arkansas State University - Jonesboro*

2. Contact person/title: *Kristie Vinson, Assistant Professor of Physical Therapy, College of Nursing & Health Professions*

3. Phone number/e-mail address:*870-972-3236, kvinson@astate.edu*

4. Proposed effective date:*Immediately*

5. Title of certificate, degree program, option/emphasis/concentration, or organizational unit: *Transitional Doctor of Physical Therapy*

6. CIP Code: 51.2308

7. Degree Code: 7440

8. Reason for deletion: *Diminishing student interest; program was initiated on a temporary bases and it has now run its course.*

9. Number of students still enrolled in program: *0*

10. Expected graduation date of last student: *n/a*

11. Name of courses that will be deleted as a result of this action:
PT 7512, Professional Issues I
PT 7323, Imaging and Pharmacology

12. How will students in the deleted program be accommodated? *n/a*

13. Provide documentation of written notification to students currently enrolled in program. *n/a*

14. Indicate the amount of program funds available for reallocation: *No funding was specifically tied to this program.*

15. Provide additional program information if requested by ADHE staff.

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic officer: _____ Date:

Name (printed):

Code # Enter text...

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or** [ ] **Experimental Course (1-time offering)** **(Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

David F. Gilmore 9/29/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Thomas Risch 9/29/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 9/27/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 9/29/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Travis Marsico; tmarsico@astate.edu; 870-680-8191

2. Proposed Starting Term and Bulletin Year
Spring 2018; 2017 – 2018 Bulletin

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
BIO 5823

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Natural History Collections Research Design
Short title: Nat Hist Coll Rsch Design

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Evaluation and development of research questions using current, peer-reviewed literature as a basis for discussion supported by natural history specimens and data. Research topics include taxonomy, biogeography, ecology, and global change biology. Activities demonstrate hypothesis testing in biodiversity science.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. Are there any prerequisites? Yes
    a. If yes, which ones?
       BIO 5813, Curation of Collections
    b. Why or why not?
       Students will be most successful in the completion of BIO 5823 if they have successfully completed the companion course BIO 5813, which teaches practical techniques of managing natural history collections.

b. Is this course restricted to a specific major? No
    a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. Is this course dual listed (undergraduate/graduate)?
Yes

11. Is this course cross listed? (If it is, all course entries must be identical including course descriptions. It is important to check the course description of an existing course when adding a new cross listed course.)
No

a. If yes, please list the prefix and course number of cross listed course.
b. Are these courses offered for equivalent credit?
   Please explain.

12. Is this course in support of a new program? No
    a. If yes, what program?

13. Does this course replace a course being deleted? No
    a. If yes, what course?

14. Will this course be equivalent to a deleted course? No

a. If yes, which course?

15. Has it been confirmed that this course number is available for use? Yes
If no: Contact Registrar's Office for assistance.

16. Does this course affect another program? No
If yes, provide contact information from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

DATE LECTURE TOPIC

WEEK 1 INTRODUCTION TO HISTORICAL USES OF NATURAL HISTORY COLLECTIONS

WEEK 2 THE PURPOSE OF GATHERING SPECIMENS IN THE 1600s-1800s (global discovery for science)

WEEK 3 NATURAL HISTORY COLLECTIONS RESEARCH IN THE 20th CENTURY (discovering extinctions)

WEEK 4 INTRODUCTION TO 21st CENTURY USES OF COLLECTIONS (including modern genetic techniques)

WEEK 5 DESCRIBING NEW SPECIES

WEEK 6 TAXONOMIC REVISIONS

WEEK 7 DOCUMENTING EXTINCTION

WEEK 8 COLLECTIONS IN GLOBAL CHANGE BIOLOGY RESEARCH

WEEK 9 COLLECTIONS IN BIOGEOGRAPHY

WEEK 10 SPRING BREAK

WEEK 11 COLLECTIONS IN BIODIVERSITY INVENTORY

WEEK 12 COLLECTIONS FOR RESTORATION PROJECTS

WEEK 13 OBTAINING DNA FROM SPECIMENS

WEEK 14 ANCIENT DNA

WEEK 15 PRESENTATION OF RESEARCH PROJECTS

18. Special features (e.g. labs, exhibits, site visitations, etc.)
Visits and hands-on activities in the Arkansas Center for Biodiversity Collections (ACBC).

19. Department staffing and classroom/lab resources
A regular classroom and resources associated with the Arkansas Center for Biodiversity Collections will be used.

a. Will this require additional faculty, supplies, etc.?
No.

20. Does this course require course fees? No
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course may be used to fulfill three hours in the graduate curriculum. This course will be particularly useful for students who plan on a life science career in academic or museum settings studying organismal biology, biogeography, ecology, and biodiversity. Also, field biologists of all types (and other types of science majors, too) will benefit from

knowing about research using biodiversity collections because the ability to critically analyze research questions and develop testable hypotheses is a necessary skill for scientists. Goals for the course include understanding the variety of applications of natural history specimens in biological research and the limitations inherent in natural history specimen datasets. Through understanding how previous researchers have successfully used natural history collections in their research, students will develop skills to design their own research projects as university students and life science professionals.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

For an MA or MS degree in Biology, one of the programmatic outcomes is to "Acquire the skills and knowledge needed for employment or advanced graduate study in discipline-related areas." This course directly addresses this programmatic outcome by providing skills-based training for students that will prepare them for the natural history museum workforce, an important sector in the generation of new biological knowledge. Fundamental textbook knowledge in evolution, adaptation, diversity, structure, and function has been discovered using biological collections, and this course addresses the research that has been developed using these collections.

For students in EVS (MS or Ph.D.) program, this course will address two programmatic outcomes: 1) Advanced knowledge of the field: students will be able to demonstrate competency in the multi-disciplinary field through coursework and field/laboratory studies. This course will provide specific training in a branch of science important in the environmental sciences, biodiversity research. 2) Students will develop expertise in oral and written science communication skills. In this course, through discussion, preparing to lead, and leading discussions of peer-reviewed scientific literature, students will hone their development of science communication.

c. Student population served.

This course will primarily serve graduate students in biological sciences and environmental science. This course is designed to teach students how to effectively and appropriately interpret scientific literature to learn how researchers have used natural history specimen collections to answer important scientific research questions across space and time.

d. Rationale for the level of the course (lower, upper, or graduate).

This course covers material that requires a high level of skill and specialization in biodiversity. Therefore, it is designated as a graduate level course. Individuals interested in curation or museum careers will greatly benefit from taking this course, and it covers material typically not covered in undergraduate biology curricula. This course differs from the undergraduate section of the course in the following ways: 1) graduate students will function as organizational team leaders for group projects in the course, 2) graduate students will be expected to present a lecture and/or lead a paper discussion of the relevant collections topic, and 3) graduate students will serve as peer-reviewers to undergraduates in the course as they develop their research projects.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [X] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?
The program-level learning outcome for the course is: Students will be able to discuss the relevance of evolution to diversity. Because natural history collections are the way that scientists document Earth's biological diversity outcomes, scientists who work in these collections are concerned with understanding the evolutionary processes that resulted in those outcomes. This course will reinforce this program-level outcome, and add to assessment reporting for this outcome.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.
For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	Students will be able to discuss the relevance of evolution to diversity.
Assessment Measure	Students will participate in discussions of assigned reading material. Students will be assessed on the progress of their understanding through assessment of their contributions to the class discussions. Moreover, all graduate students in biology take a Biology Seminar capstone course, and they will be assessed in that course on this PLO
Assessment Timetable	This program-level outcome will be assessed each time this course and the Biology Seminar course is taught.
Who is responsible for assessing and reporting on the results?	The instructor will assess the outcome and report the results to the Department Assessment Committee Chair.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Compare and contrast research projects that utilize natural history specimen collections.
Which learning activities are responsible for this outcome?	Reading and lecture material and discussion of these.
Assessment Measure	Participation in weekly discussions based upon reading assignments and lecture materials.
Outcome 2	Develop a testable hypothesis using specimens and/or specimen data.
Which learning activities are	Application of reading, lecture, and discussion materials, and hands-on experiences with natural history collections and their associated data.

responsible for this outcome?	
Assessment Measure	Developing and implementing a research project; presenting results.

Bulletin Changes

Instructions

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***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

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- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

BIO 5633. Environmental Toxicology: Mechanisms and Impacts Understanding the basic principles behind the study of impacts and the mechanisms of physiological disturbances associated with environmental toxicant exposure to natural systems. Prerequisites: BIO 4131, BIO 4133 and CHEM 4232 or permission of professor. Lecture three hours per week.

BIO 5684. Biological Data Analyses Use of statistical tests and models (regression, ANOVA, generalized linear models, and mixed-effect models, PCA) to analyze ecological/biological data. Applications using a free statistical program. Prerequisite: Applied Statistics or equivalent.

BIO 5704. Plant Systematics A study of the systematics, nomenclature, morphology, and identification terminology for vascular plants with an emphasis on dichotomous key-based identification of flowering plants of Arkansas.

BIO 5714. Dendrology A study of the systematics, nomenclature, morphology, phenology, geographic range, and natural history of woody plants with an emphasis on field recognition throughout the year.

BIO 5813. Curation of Collections Current, appropriate museum-quality specimen curation for a range of taxa including the collection and preservation of specimens of vascular plants, fungi, mussels, fish, reptiles and amphibians, and mammals. Dual listed with BIO 4813. Prerequisites, BIO 1301, BIO 1303, BIO 1501 and BIO 1503 or equivalent courses.

BIO 5823. Natural History Collections Research Design *Evaluation and development of research questions using current, peer-reviewed literature as a basis for discussion supported by natural history specimens and data. Research topics include taxonomy, biogeography,*

ecology, and global change biology. Activities demonstrate hypothesis testing in biodiversity science. Dual listed with BIO 4823. Prerequisite, BIO 5813 or approval from instructor.

BIO 6001. Biological Seminar Required of all graduate students.

BIO 6003. Scientific Methods and Research Design A focus on the understanding and development of the scientific method as it pertains to research. Required of the graduate life sciences major, including students studying within the Biology, Botany, Wildlife Management and Zoology emphasis.

BIO 6013. Evolutionary Biology A summary of current theories concerned with evolution of biological organisms. An elective course particularly directed to the needs of biological science majors including students of Biology, Botany, Zoology, and Wildlife Management. (Fall of even years)

BIO 6113. Advanced Cell Biology Study of recent advances in cell biology through critical analysis of current literature. Focusing on eukaryotic cell structure and function, topics may include, but not be restricted to, cellular structures and organelles; cell cycling; signal transduction; gene regulation; and intracellular trafficking. Perquisites: A course in cell biology or permission of the professor.

BIO 6123. Specialized Biochemistry An advanced study of biochemical pathways leading to specialized biologically active metabolites. Emphasis will be on specialized pathways in plants and their counterparts in animals, and microorganisms.

BIO 6143. Introduction to Biotechnology & Research Design Study of molecular biological techniques and experimental designs through oral and written review of scientific literature. Career preparation by construction of curriculum vitae and work portfolios. Prerequisities: Students must be graduate students in a biological field of science.

BIO 6196. Internship in Biotechnology Participation in an internship with a private business, research center or public agency in the field of biotechnology. Included is a minimum of 300 work hours. Internship may be a volunteer or paid position. Included is the completion and approval of a synthesis paper covering methods and applications of molecular tools used during this internship. Prerequisite: BIO 6144, BIO 6154.

BIO 6301. Aquatic Biology The collection, identification, and study of aquatic invertebrate and vertebrate animals with emphasis on life history, ecology, and importance to man. Lecture one hour per week. Prerequisites: BIO 1503, 1501,1303,1301.

BIO 6302. Laboratory for Aquatic Biology Four hours per week. To be taken concurrently with BIO 6301. (Course fee, $20)

BIO 6311. Laboratory for Medical and Veterinary Entomology Two hours per week. To be taken concurrently with BIO 6313. (Course fee, $20)

BIO 6313. Medical and Veterinary Entomology A study of the taxonomy, biology and control of arthropods associated with human and animal diseases. Lecture three hours per week. Corequisite: BIO 6311.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

Course Revision Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/27/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/27/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 9/29/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 9/29/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

---

1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year for Change to Take Effect
Spring 2018; 2018-2019 bulletin year

3. Current Course Prefix and Number
CS 5032

3.1 – **[No]** Request for Course Prefix and Number change
If yes, include new course Prefix and Number below. *(Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. Proposed number for experimental course is 9.)*

3.2 – If yes, has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

4. Current Course Title

Algorithms and Advanced Data Structures

4.1 – **[Yes]** Request for Course Title Change

If yes, include new Course Title Below.

Accelerated Algorithms and Advanced Data Structures

a. If title is more than 30 characters (including spaces), provide short title to be used on transcripts. *Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis).*
   Acc Algs and Adv Data Structs

b. Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
   No

5. – **[No]** Request for Course Description Change.

If yes, please include brief course description (40 words or fewer) as it should appear in the bulletin.

6. – [No] Request for prerequisites and major restrictions change.

(If yes, indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. Are there any prerequisites?
   a. If yes, which ones?
   b. Why or why not?

b. Is this course restricted to a specific major?
   a. If yes, which major?

7. – [No] Request for Course Frequency Change (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

a. If yes, please indicate current and new frequency:

8. – [No] Request for Class Mode Change

If yes, indicate if this course will be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please indicate the current and choose one.

9. – [No] Request for grade type change

If yes, what is the current and the new grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

10. No Is this course dual listed (undergraduate/graduate)?

a. If yes, indicate course prefix, number and title of dual listed course.

11. No Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. No Is this course change in support of a new program?
    a. If yes, what program?

13. No Does this course replace a course being deleted?
    a. If yes, what course?
    Enter text...

14. No Will this course be equivalent to a deleted course or the previous version of the course?
    a. If yes, which course?

15. No Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

16. Does this course require course fees?
If yes: Please attach the New Program Tuition and Fees form, which is available from the UCC website.
No

Revision Details

17. Please outline the proposed revisions to the course.
Include information as to any changes to course outline, special features, required resources, or in academic rationale and goals for the course.

None

18. Please provide justification to the proposed changes to the course.

The first word of the course title was omitted when the course was added to the graduate bulletin.

19. No Do these revisions result in a change to the assessment plan?

**If yes: Please complete the Assessment section of the proposal on the next page.*
**If no: Skip to Bulletin Changes section of the proposal.*

See question 19 before completing the Assessment portion of this proposal.

Assessment

University Outcomes

20. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [ ] Thinking Critically | c. [ ] Information Literacy

Relationship with Current Program-Level Assessment Process

21. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

22. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	
Assessment Measure	
Assessment Timetable	
Who is responsible for assessing and reporting on the results?	Who (person, position title, or internal committee) is responsible for assessing, evaluating, and analyzing results, and developing action plans?

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

23. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	
Which learning activities are responsible for this outcome?	
Assessment Measure	What will be your assessment measure for this outcome?

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-18 Graduate Bulletin, page 374:

CS 5012. Accelerated Structured Programming First course in programming, emphasis on programming methodology, procedural abstraction, and top down design. Introduction to string processing, fie input and output, recursion, and simple data structures. Cannot be used for CS degree credit. Prerequisite, Permission of Computer Science faculty.

CS 5022. Accelerated OOP and Fundamental Data Structures Emphasis on object oriented programming techniques. Introduction to abstract data types. Linked lists, stacks, queues and binary trees. Searching and sorting techniques. Cannot be used for CS degree credit. Prerequisite, Permission of Computer Science faculty.

CS 5032. Accelerated **Algorithms and Advanced Data Structures** Analysis of data structures and associated algorithms. Examination of advanced tree structures, heaps, hashing techniques, and graph algorithms. Cannot be used for CS degree credit. Prerequisite, Permission of Computer Science faculty.

CS 5113. Software Engineering I Techniques of design, implementation, and automated tools, quality assurance, metrics, and maintenance for large scale software systems. Projects will provide team programming experience. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5123. Software Engineering II Continuation of Software Engineering I; the survey techniques for dealing with large scale software systems begun there continues here. Projects will provide team programming experience. Prerequisite: CS 5113.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

Course Revision Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/27/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/27/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 9/29/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne Grippo 9/29/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

---

1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year for Change to Take Effect
Spring 2018; 2018-2019 bulletin year

3. Current Course Prefix and Number
CS 5413

3.1 – **[No]** Request for Course Prefix and Number change
If yes, include new course Prefix and Number below. *(Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. Proposed number for experimental course is 9.)*

3.2 – If yes, has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

4. Current Course Title

Computer Graphics I

4.1 – **[Yes]** Request for Course Title Change

If yes, include new Course Title Below.

Fundamental Computer Graphics

a. If title is more than 30 characters (including spaces), provide short title to be used on transcripts. *Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis).*
   Not applicable (29 characters)

b. Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
   No

5. – **[No]** Request for Course Description Change.

If yes, please include brief course description (40 words or fewer) as it should appear in the bulletin.

6. – [No] Request for prerequisites and major restrictions change.

(If yes, indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. Are there any prerequisites?
   a. If yes, which ones?
   b. Why or why not?

b. Is this course restricted to a specific major?
   a. If yes, which major?

7. – [No] Request for Course Frequency Change (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

a. If yes, please indicate current and new frequency:

8. – [No] Request for Class Mode Change

If yes, indicate if this course will be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please indicate the current and choose one.

9. – [No] Request for grade type change

If yes, what is the current and the new grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

10. Yes Is this course dual listed (undergraduate/graduate)?

a. If yes, indicate course prefix, number and title of dual listed course.
   CS 4413 Computer Graphics I (parallel name change request to Fundamental Computer Graphics submitted)

11. No Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. No Is this course change in support of a new program?
a. If yes, what program?

13. No Does this course replace a course being deleted?
a. If yes, what course?
Enter text...

14. No Will this course be equivalent to a deleted course or the previous version of the course?
a. If yes, which course?

15. No Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

16. Does this course require course fees?
If yes: Please attach the New Program Tuition and Fees form, which is available from the UCC website.
No

Revision Details

17. Please outline the proposed revisions to the course.
Include information as to any changes to course outline, special features, required resources, or in academic rationale and goals for the course.

None

18. Please provide justification to the proposed changes to the course.

The course name is being changed to reflect that it is not necessarily part of a sequence; students have taken this course and its current sequel CS 5413 successfully in either order in past offerings.

19. No Do these revisions result in a change to the assessment plan?

**If yes: Please complete the Assessment section of the proposal on the next page.*
**If no: Skip to Bulletin Changes section of the proposal.*

See question 19 before completing the Assessment portion of this proposal.

Assessment

University Outcomes

20. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [ ] Thinking Critically | c. [ ] Information Literacy

Relationship with Current Program-Level Assessment Process

21. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

22. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	
Assessment Measure	
Assessment Timetable	
Who is responsible for assessing and reporting on the results?	Who (person, position title, or internal committee) is responsible for assessing, evaluating, and analyzing results, and developing action plans?

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

23. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	
Which learning activities are responsible for this outcome?	
Assessment Measure	What will be your assessment measure for this outcome?

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

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- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-18 Graduate Bulletin, page 375:

CS 5223. **UNIX Systems Programming** System-level programming in UNIX systems. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5313. **Computer Networks** Issues and principles involved in the design of computer networks using the OSI reference model as a framework. Prerequisite: CS 3233 or "B" or better in CS 5032.

CS 5413. Fundamental Computer Graphics The creation, storage, and manipulation of models of objects and their pictures via computer. Implementation of graphics routines beginning at the device driver level and continuing with two- and three-dimensional techniques. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5423. **Computer Graphics II** Continuation of Computer Graphics I. Techniques for generation of realistic solid models are examined. Topics include hidden surface removal, shading, shadowing, reflction, refraction, and color theory. Prerequisite: CS 5413.

CS 5433. **Artifiial Intelligence** Representation of knowledge and introduction to a functional programming language; search methods and control. Typical applications of artifiial intelligence. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5543. **Database Systems** Topics include major database models; relational algebra; data independence and database normalization; entity relationship model; security, integrity, recovery and concurrency issues; physical organization of a database. Prerequisite: CS 3113 or "B" or better in CS 5032.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

Course Revision Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/27/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/27/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 9/29/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne Grippo 9/29/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year for Change to Take Effect
Spring 2018; 2018-2019 bulletin year

3. Current Course Prefix and Number
CS 5423

3.1 – **[No]** Request for Course Prefix and Number change
If yes, include new course Prefix and Number below. *(Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. Proposed number for experimental course is 9.)*

3.2 – If yes, has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

4. Current Course Title

Computer Graphics II

4.1 – **[Yes]** Request for Course Title Change

If yes, include new Course Title Below.

Interactive Computer Graphics

a. If title is more than 30 characters (including spaces), provide short title to be used on transcripts. *Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis).*
   Not applicable (29 characters)
b. Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
   No

5. – **[Yes]** Request for Course Description Change.

If yes, please include brief course description (40 words or fewer) as it should appear in the bulletin.

Techniques for creating realistic environments. Topics include hidden surface removal, shading, shadowing, reflection, refraction, and color theory.

6. – [Yes] Request for prerequisites and major restrictions change.

(If yes, indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS 3113 or "B" or better in CS 5032
   b. Why or why not?
      Student needs a background in algorithms and data structures to master the course material.

b. No Is this course restricted to a specific major?
   a. If yes, which major?

7. – [No] Request for Course Frequency Change (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

a. If yes, please indicate current and new frequency:

8. – [No] Request for Class Mode Change

If yes, indicate if this course will be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please indicate the current and choose one.

9. – [No] Request for grade type change

If yes, what is the current and the new grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

10. Yes Is this course dual listed (undergraduate/graduate)?

a. If yes, indicate course prefix, number and title of dual listed course.
   CS 4423 Computer Graphics II (parallel name change request to Interactive Computer Graphics submitted)

11. No Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. No Is this course change in support of a new program?
a. If yes, what program?

13. No Does this course replace a course being deleted?
a. If yes, what course?
Enter text...

14. No Will this course be equivalent to a deleted course or the previous version of the course?
a. If yes, which course?

15. No Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

16. Does this course require course fees?
If yes: Please attach the New Program Tuition and Fees form, which is available from the UCC website.
No

Revision Details

17. Please outline the proposed revisions to the course.
Include information as to any changes to course outline, special features, required resources, or in academic rationale and goals for the course.

None

18. Please provide justification to the proposed changes to the course.

The course name, description and prerequisite are being changed to reflect that it is not necessarily part of a sequence; students have taken this course and its current "prerequisite" CS 5413 successfully in either order in past offerings.

19. No Do these revisions result in a change to the assessment plan?

**If yes: Please complete the Assessment section of the proposal on the next page.*
**If no: Skip to Bulletin Changes section of the proposal.*

See question 19 before completing the Assessment portion of this proposal.

Assessment

University Outcomes

20. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [ ] Thinking Critically | c. [ ] Information Literacy

Relationship with Current Program-Level Assessment Process

21. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

22. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	
Assessment Measure	
Assessment Timetable	
Who is responsible for assessing and reporting on the results?	Who (person, position title, or internal committee) is responsible for assessing, evaluating, and analyzing results, and developing action plans?

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

23. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	
Which learning activities are responsible for this outcome?	
Assessment Measure	What will be your assessment measure for this outcome?

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

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- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

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2017-18 Graduate Bulletin, page 375:

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CS 5413. **Computer Graphics I** The creation, storage, and manipulation of models of objects and their pictures via computer. Implementation of graphics routines beginning at the device driver level and continuing with two- and three-dimensional techniques. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5423. **Interactive Computer Graphics** Techniques for creating realistic environments. Topics include hidden surface removal, shading, shadowing, reflection, refraction, and color theory. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5433. **Artificial Intelligence** Representation of knowledge and introduction to a functional programming language; search methods and control. Typical applications of artifiial intelligence. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5543. **Database Systems** Topics include major database models; relational algebra; data independence and database normalization; entity relationship model; security, integrity, recovery and concurrency issues; physical organization of a database. Prerequisite: CS 3113 or "B" or better in CS 5032.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 7/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 7/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

---

1. Contact Person (Name, Email Address, Phone Number)
Hung-Chi Su, suh@astate.edu, (870)680-8119

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 5623

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Fundamentals of Data Science

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Study of the practices and techniques associated with data science, including programming for data analytics, modern technologies for data access in distributed and parallel systems, and an overview of machine learning models.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and STAT3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032), and statistics (STAT3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      Data Science Certificate in Computer Science

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
    a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
    If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
    If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Introduction and Data Science Process
Week 2: Infrastructure and Tools
Week 3: Visualizing Data
Week 4: Linear Algebra Review
Week 5: Statistical Distributions & Probability Review
Week 6: Data Collection & Data Cleaning
Week 7: Gradient Descent & Machine Learning Concepts
Week 8: Supervised Learning
Week 9: Supervised Learning
Week 10: Unsupervised Learning
Week 11: Scaling Up Analytics-Map Reduce
Week 12: Scaling Up Analytics-Spark
Week 13: Parallel Processing
Week 14: Graph Processing

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?

No. The department's elective course rotation will be adjusted to free up a position for offerings of this course. No additional equipment or supplies will be needed.

20. **No** Does this course require course fees?

If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

The demand for data science skills from both industry and academia is growing rapidly. This course will equip students with the skills and tools used for data science application development necessary to address this demand.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. The department needs to prepare students for work and continuing advancement in the industrial application and computing research of data science.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have comprehensive understanding about analysis of algorithms, data structures, statistics, and programming skills.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will be familiar with the software platform for data science.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Student will become familiar with the data analytics.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

Outcome 3	Students will get experience which will develop implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

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CS 5423. Computer Graphics II Continuation of Computer Graphics I. Techniques for generation of realistic solid models are examined. Topics include hidden surface removal, shading, shadowing, reflection, refraction, and color theory. Prerequisite: CS 5413.

CS 5433. Artificial Intelligence Representation of knowledge and introduction to a functional programming language; search methods and control. Typical applications of artificial intelligence. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5543. Database Systems Topics include major database models; relational algebra; data independence and database normalization; entity relationship model; security, integrity, recovery and concurrency issues; physical organization of a database. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5623. Fundamentals of Data Science Study of the practices and techniques associated with data science, including programming for data analytics, modern technologies for data access in distributed and parallel systems, and an overview of machine learning models. Prerequisites: CS3113 or "B" or better in CS5032, and STAT3233.

CS 5713. Analysis of Algorithms The analysis of space and time requirements of algorithms. Worst-case and average case studies. Greedy algorithms and divide-and-conquer algorithms examined. Tractable and intractable algorithms surveyed. Prerequisites: CS 3113 or "B" or better in CS 5032, and MATH 2214.

CS 5723. Automata Theory Study formal languages and equivalent models of computation. Finite state automata and regular expressions. Push-down automata and context free grammars. Pumping lemmas and closure properties. Turing Machines. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5823. Scripting Languages Examination of scripting languages compared to conventional programming languages and construction of domain-specific solutions for common problems in GUI, networking, and web programming. Prerequisite: CS 3113 or "B" or better in CS 5032.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hai Jiang, hjiang@astate.edu, (870)680-8164

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6123

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Software Security

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Study of security issues in the software development process, including security management, secure software development lifecycle, language security, and web application security.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and CS3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032) and Operating Systems (CS3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      Cyber Security Certificate in Computer Science

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Overview
Week 2: Security Management and Risk Assessment
Week 3: Security Controls, Plans and Procedures
Week 4: Human Resource Security
Week 5: Legal and Ethical Aspects
Week 6: Threat Modeling
Week 7: Secure Software Development Lifecycle
Week 8: Secure Software Development Lifecycle
Week 9: Firewalls and Intrusion Prevention Systems
Week 10: C Language Security
Week 11: C Language Security
Week 12: Penetration Testing
Week 13: Web Application Security
Week 14: Web Application Security

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?

No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?

If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Since software security is a central and critical aspect of a secure system, software design, development, and analysis are top priority issues in cyber security. This new course will prepare students to be security programmers and software security analysts. Such professionals are in high demand in industry

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. While the department curriculum has included data security for some time, the rapid growth in security issues in recent years brings great attention and challenges to computer science academia and industry in the developing field of software security. The proposed course will address security issues during software design and the development process, strengthening the department's curriculum.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have comprehensive understanding about computer systems as well as programming skills.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become familiar with the requirements for secure programming.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analysis skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and projects

Outcome 3	Students will get experience which will develop implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
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CS 5713. Analysis of Algorithms The analysis of space and time requirements of algorithms. Worst-case and average case studies. Greedy algorithms and divide-and-conquer algorithms examined. Tractable and intractable algorithms surveyed. Prerequisites: CS 3113 or "B" or better in CS 5032, and MATH 2214.

CS 5723. Automata Theory Study formal languages and equivalent models of computation. Finite state automata and regular expressions. Push-down automata and context free grammars. Pumping lemmas and closure properties. Turing Machines. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5823. Scripting Languages Examination of scripting languages compared to conventional programming languages and construction of domain-specific solutions for common problems in GUI, networking, and web programming. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 583V. Internship Supervised work experience participating in application system development in a business/manufacturing environment. Grade earned will be pass or fail. Prerequisites: Permission of the Computer Science faculty, CS 3113 or "B" or better in CS 5032, and either CS 3123 or CS 5113.

CS 6123. Software Security **Study of security issues in the software development process, including security management, secure software development lifecycle, language security, and web application security.** ***Prerequisite: CS 3113 or "B" or better in CS 5032, and CS3233.***

CS 6213. Parallel Processing Parallel processing and supercomputer architecture with emphasis on efficient utilization of resources. Prerequisite: CS 3223, or "B" or better in CS 5032 and permission of professor.

CS 6313. Data Security Methods for protection, security, and privacy of data; access controls, authentication, cryptographic controls, information flow controls, security kernels. Security of data in networks. Prerequisite: CS 3233 or "B" or better in CS 5032.

CS 6413. Solid Modeling Examination of advanced modeling techniques with emphasis on radiosity. Techniques for rapid interactive display of a complex three-dimensional environment will be developed. Prerequisite: CS 3113 or "B" or better in CS 5032 or CS 5423.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hai Jiang, hjiang@astate.edu, (870)680-8164

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6223

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Advanced Computer Architecture

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Advanced topics on computer architecture, including: memory hierarchy design; instruction-level parallelism in pipelines; data-level parallelism in vector, SIMD and GPU architectures; thread-level parallelism; warehouse-scale computers.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS 3113 or "B" or better in CS 5032 and CS 3223
   b. Why or why not?
      The material covered by the course requires understanding of advanced programming concepts (CS3113 or CS5032) and some background knowledge of computer architecture (CS3223).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      High Performance Computing Certificate

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Overview
Week 2: Cache
Week 3: Memory Hierarchy Design
Week 4: Digital Circuits
Week 5: Instruction Set Principles
Week 6: Pipelined Datapath
Week 7: Pipeline Hazards
Week 8: Branch Prediction
Week 9: Dynamic Scheduling
Week 10: Instruction-Level Parallelism in Pipelines
Week 11: Vector, SIMD and GPU Architecture
Week 12: Data-Level Parallelism in Vector, SIMD and GPU Architecture
Week 13: Thread-Level Parallelism
Week 14: Warehouse-Scale Computers

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has already been part of the rotation as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

High performance computing is critical in the current computer world. However, computer performance relies on hardware structure heavily. Therefore, this proposed course helps graduate students acquire sufficient knowledge to pursue careers in the high performance computing field.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

The department curriculum has included computer organization for undergraduate students since the inception of the undergraduate degrees. This new course will help equip graduate students with more detailed knowledge. It will strengthen the current department curriculum in the direction of major research schools.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have sufficient study skills and maturity to master the sophisticated hardware structure concepts. Graduate students are best prepared to accomplish it.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become familiar with the theory and practice associated with advanced computer architecture.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding hardware analysis skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Perform analytic evaluation of example algorithms
Assessment Measure	Course presentations and exams

Outcome 3	Students will get experience with computer hardware structure which will develop implementation and programming skills which take effective advantage of hardware components.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

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CS 5823. Scripting Languages Examination of scripting languages compared to conventional programming languages and construction of domain-specific solutions for common problems in GUI, networking, and web programming. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 583V. Internship Supervised work experience participating in application system development in a business/manufacturing environment. Grade earned will be pass or fail. Prerequisites: Permission of the Computer Science faculty, CS 3113 or "B" or better in CS 5032, and either CS 3123 or CS 5113.

CS 6213. Parallel Processing Parallel processing and supercomputer architecture with emphasis on efficient utilization of resources. Prerequisite: CS 3223, or "B" or better in CS 5032 and permission of professor.

CS 6223. Advanced Computer Architecture Advanced topics on computer architecture, including: memory hierarchy design; instruction-level parallelism in pipelines; data-level parallelism in vector, SIMD, and GPU architectures; thread-level parallelism; warehouse-scale computers. Prerequisite: CS 3113 or "B" or better in CS 5032, and CS 3223.

CS 6313. Data Security Methods for protection, security, and privacy of data; access controls, authentication, cryptographic controls, information flow controls, security kernels. Security of data in networks. Prerequisite: CS 3233 or "B" or better in CS 5032.

CS 6413. Solid Modeling Examination of advanced modeling techniques with emphasis on radiosity. Techniques for rapid interactive display of a complex three-dimensional environment will be developed. Prerequisite: CS 3113 or "B" or better in CS 5032 or CS 5423.

CS 6423. Robotic Software Control Study of robot manipulators from mathematical and programmed control perspectives. Topics include kinematic representation, manipulator positioning, velocity control, and trajectory calculation. Prerequisite: CS 3113 or "B" or better in CS 5032.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
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David F. Gilmore 10/6/2017
College Curriculum Committee Chair

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Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

---

1. Contact Person (Name, Email Address, Phone Number)
Dr. Hai Jiang, hjiang@astate.edu, (870)680-8164

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6233

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Operating System Design

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Advanced topics on the design and implementation of major operating systems, including memory management, kernel data structures, process management, file systems, devices and modules.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS 3113 or "B" or better in CS 5032 and CS 3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced programming concepts (CS3113 or CS5032) and some background knowledge of operating systems (CS3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      High Performance Computing Certificate

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Overview
Week 2: Unix/Linux History
Week 3: Building and booting the Linux Kernel
Week 4: More on building and booting the Linux Kernel
Week 5: Process management and scheduling
Week 6: System calls
Week 7: Kernel data structure
Week 8: Interrupts and interrupt handlers
Week 9: Kernel synchronization
Week 10: Timers and time management
Week 11: Memory management
Week 12: The virtual file system
Week 13: Devices and modules
Week 14: Advanced topics

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has already been part of the rotation as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

High performance computing is critical in the current computer world. However, computer performance relies on operating systems heavily. Therefore, this proposed course helps graduate students acquire sufficient knowledge to pursue careers in the high performance computing field.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

The department curriculum has included operating systems for undergraduate students since the inception of the undergraduate degrees. This new course will help equip graduate students with more detailed knowledge. It will strengthen the current department curriculum in the direction of major research schools

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have sufficient study skills and maturity to master the sophisticated hardware structure concepts. Graduate students are best prepared to accomplish it.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become familiar with the theory and practice associated with operating systems design.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analysis skills necessary to analyze operating systems performance.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Perform analytic evaluation of example algorithms Students should know how to analyze operating systems performance and accomplish kernel programming.
Assessment Measure	Course presentations and exams

Outcome 3	Students will get experience with kernel programming which will develop operating systems implementation and programming skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

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CS 5823. Scripting Languages Examination of scripting languages compared to conventional programming languages and construction of domain-specific solutions for common problems in GUI, networking, and web programming. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 583V. Internship Supervised work experience participating in application system development in a business/manufacturing environment. Grade earned will be pass or fail. Prerequisites: Permission of the Computer Science faculty, CS 3113 or "B" or better in CS 5032, and either CS 3123 or CS 5113.

CS 6213. Parallel Processing Parallel processing and supercomputer architecture with emphasis on efficient utilization of resources. Prerequisite: CS 3223, or "B" or better in CS 5032 and permission of professor.

CS 6233. Operating System Design Advanced topics on the design and implementation of major operating systems, including memory management, kernel data structures, process management, filesystems, devices and modules. Prerequisite: CS 3113 or "B" or better in CS 5032, and CS 3233.

CS 6313. Data Security Methods for protection, security, and privacy of data; access controls, authentication, cryptographic controls, information flow controls, security kernels. Security of data in networks. Prerequisite: CS 3233 or "B" or better in CS 5032.

CS 6413. Solid Modeling Examination of advanced modeling techniques with emphasis on radiosity. Techniques for rapid interactive display of a complex three-dimensional environment will be developed. Prerequisite: CS 3113 or "B" or better in CS 5032 or CS 5423.

CS 6423. Robotic Software Control Study of robot manipulators from mathematical and programmed control perspectives. Topics include kinematic representation, manipulator positioning, velocity control, and trajectory calculation. Prerequisite: CS 3113 or "B" or better in CS 5032.

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Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
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David F. Gilmore 10/6/2017
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Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hai Jiang, hjiang@astate.edu, (870)680-8164

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6243

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Distributed Systems

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Advanced topics on distributed computing systems including computing models, cluster computing, grid computing, service computing, virtual machines, computing in the cloud, peer-to-peer computing and major distributed algorithms.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and CS3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032) and Operating Systems (CS3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      High Performance Computing Certificate

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Overview
Week 2: Cluster computing
Week 3: Grid computing
Week 4: More on Grid computing
Week 5: Service computing
Week 6: Virtual machines
Week 7: Peer-to-Peer computing
Week 8: More on Peer-to-Peer computing
Week 9: Time in a Distributed System
Week 10: Mutual exclusion
Week 11: Distributed snapshot
Week 12: Global state collection
Week 13: Coordination algorithm
Week 14: Distributed consensus

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has already been part of the rotation as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Distributed systems are the major foundation in the Internet and cloud computing, which are in turn key components of high performance computing, a critical field in the current computer world. Therefore, this proposed course helps graduate students acquire sufficient knowledge and experience to pursue careers in the high performance computing field.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. This new course will help graduate students acquire knowledge of and experience with cutting-edge technologies in the rapidly developing field of distributed systems, strengthening the department curriculum.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should already have a comprehensive understanding about computer systems as well as an analysis ability sufficiently developed to pursue current trends in the subject.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become familiar with the theory and practice associated with distributed systems.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analysis and distributed system design skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Perform analytic evaluation of example algorithms
Assessment Measure	Course presentations and exams

Outcome 3	Students will get experience with distributed system implementation and develop associated programming skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

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- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
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2017-2018 Graduate Bulletin

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CS 583V. Internship Supervised work experience participating in application system development in a business/manufacturing environment. Grade earned will be pass or fail. Prerequisites: Permission of the Computer Science faculty, CS 3113 or "B" or better in CS 5032, and either CS 3123 or CS 5113.

CS 6213. Parallel Processing Parallel processing and supercomputer architecture with emphasis on efficient utilization of resources. Prerequisite: CS 3223, or "B" or better in CS 5032 and permission of professor.

CS 6243. Distributed Systems Advanced topics on distributed computing systems including computing models, cluster computing, Grid computing, service computing, virtual machines, cloud computing, peer-to-peer computing and major distributed algorithms. Prerequisite: CS 3113 or "B" or better in CS 5032, and CS 3233.

CS 6313. Data Security Methods for protection, security, and privacy of data; access controls, authentication, cryptographic controls, information flow controls, security kernels. Security of data in networks. Prerequisite: CS 3233 or "B" or better in CS 5032.

CS 6413. Solid Modeling Examination of advanced modeling techniques with emphasis on radiosity. Techniques for rapid interactive display of a complex three-dimensional environment will be developed. Prerequisite: CS 3113 or "B" or better in CS 5032 or CS 5423.

CS 6423. Robotic Software Control Study of robot manipulators from mathematical and programmed control perspectives. Topics include kinematic representation, manipulator positioning, velocity control, and trajectory calculation. Prerequisite: CS 3113 or "B" or better in CS 5032.

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CIP Code:	
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New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
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David F. Gilmore 10/6/2017
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Anne A. Grippo 10/6/2017
College Dean

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Graduate Curriculum Committee Chair

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General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hai Jiang, hjiang@astate.edu, (870)680-8164

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6253

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Heterogeneous Computing

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
The study of the ecosystem of co-processing elements such as the Graphics Processing Unit or GPU in modern computing systems, covering hardware architecture, software design, the programming paradigm, and related libraries.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and CS3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032) and Operating Systems (CS3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

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11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      High Performance Computing Certificate

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

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16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Overview
Week 2: GPU ecosystem
Week 3: CPU architecture
Week 4: Video cards
Week 5: GPU architecture - processing
Week 6: GPU architecture - memory
Week 7: GPU generations
Week 8: basic CUDA programming
Week 9: intermediate CUDA programming
Week 10: advanced CUDA programming
Week 11: OpenCL
Week 12: advanced OpenCL concepts
Week 13: OpenACC
Week 14: Advanced GPU topics

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has already been part of the rotation as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

High performance computing is critical in the current computer world, and heterogeneous computing's significant contribution to it is playing a big role in both academia and industry. This proposed course will help graduate students acquire sufficient knowledge to pursue careers in the high performance computing field.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. This new course will help graduate students acquire knowledge of and experience with cutting-edge technologies in the rapidly developing field of heterogeneous computing in high performance computing, strengthening the department curriculum.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should already have a comprehensive understanding about computing as well as an analysis ability sufficiently developed to pursue current trends in the subject.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become familiar with the theory and practice associated with heterogeneous computing.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analysis and heterogeneous computing design skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Perform analytic evaluation of example algorithms
Assessment Measure	Course presentations and exams

Outcome 3	Students will get experience with heterogeneous computing by exposure to different GPU and coprocessor systems, developing the associated programming skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

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CS 5823. Scripting Languages Examination of scripting languages compared to conventional programming languages and construction of domain-specific solutions for common problems in GUI, networking, and web programming. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 583V. Internship Supervised work experience participating in application system development in a business/manufacturing environment. Grade earned will be pass or fail. Prerequisites: Permission of the Computer Science faculty, CS 3113 or "B" or better in CS 5032, and either CS 3123 or CS 5113.

CS 6213. Parallel Processing Parallel processing and supercomputer architecture with emphasis on efficient utilization of resources. Prerequisite: CS 3223, or "B" or better in CS 5032 and permission of professor.

CS 6253. Heterogeneous Computing The study of the ecosystem of co-processing elements such as the Graphics Processing Unit or GPU in modern computing systems, covering hardware architecture, software design, the programming paradigm, and related libraries. Prerequisite: CS 3113 or "B" or better in CS 5032, and CS3233.

CS 6313. Data Security Methods for protection, security, and privacy of data; access controls, authentication, cryptographic controls, information flow controls, security kernels. Security of data in networks. Prerequisite: CS 3233 or "B" or better in CS 5032.

CS 6413. Solid Modeling Examination of advanced modeling techniques with emphasis on radiosity. Techniques for rapid interactive display of a complex three-dimensional environment will be developed. Prerequisite: CS 3113 or "B" or better in CS 5032 or CS 5423.

CS 6423. Robotic Software Control Study of robot manipulators from mathematical and programmed control perspectives. Topics include kinematic representation, manipulator positioning, velocity control, and trajectory calculation. Prerequisite: CS 3113 or "B" or better in CS 5032.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

---

1. Contact Person (Name, Email Address, Phone Number)
Dr. Hai Jiang, hjiang@astate.edu, (870)680-8164

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6263

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Cloud Computing

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Major aspects of the cloud ecosystem including conceptual basis, design, virtualization, architecture, storage, programming paradigms, and software development.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and CS3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032) and Operating Systems (CS3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      High Performance Computing Certificate

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Overview
Week 2: Cloud computing basics
Week 3: Cloud deployment
Week 4: Related technologies
Week 5: Virtualization
Week 6: Virtualization
Week 7: Cloud mechanisms
Week 8: Cloud architecture
Week 9: Cloud storage
Week 10: Cloud storage
Week 11: Cloud programming paradigms
Week 12: Hadoop
Week 13: Spark
Week 14: Distributed consensus

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The rotation of course offerings will be adjusted to accommodate this addition to the curriculum.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Clouds are an increasingly significant computing platform in the computer world of high performance computing, and cloud computing has a corresponding high demand in both academia and industry. Cloud computing is also the major platform for big data applications. This proposed course will help graduate students acquire sufficient knowledge to pursue careers in the higher performance computing field.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. This new course will help graduate students acquire knowledge of and experience with cutting-edge technologies in the rapidly developing field of cloud computing, strengthening the department curriculum

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should already have a comprehensive understanding about computing as well as an analysis ability sufficiently developed to pursue current trends in the subject.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become familiar with the theory and practice associated with cloud computing.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analysis and cloud design skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Perform analytic evaluation of example algorithms
Assessment Measure	Course presentations and exams

Outcome 3	Students will get experience with programming and deploying applications in clouds, developing the associated programming skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

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Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

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CS 5723. Automata Theory Study formal languages and equivalent models of computation. Finite state automata and regular expressions. Push-down automata and context free grammars. Pumping lemmas and closure properties. Turing Machines. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5823. Scripting Languages Examination of scripting languages compared to conventional programming languages and construction of domain-specific solutions for common problems in GUI, networking, and web programming. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 583V. Internship Supervised work experience participating in application system development in a business/manufacturing environment. Grade earned will be pass or fail. Prerequisites: Permission of the Computer Science faculty, CS 3113 or "B" or better in CS 5032, and either CS 3123 or CS 5113.

CS 6213. Parallel Processing Parallel processing and supercomputer architecture with emphasis on efficient utilization of resources. Prerequisite: CS 3223, or "B" or better in CS 5032 and permission of professor.

CS 6263. Cloud Computing Major aspects of the cloud ecosystem including conceptual basis, design, virtualization, architecture, storage, programming paradigms, and software development. Prerequisite: CS3113 or "B" or better in CS5032, and CS3233.

CS 6313. Data Security Methods for protection, security, and privacy of data; access controls, authentication, cryptographic controls, information flow controls, security kernels. Security of data in networks. Prerequisite: CS 3233 or "B" or better in CS 5032.

CS 6413. Solid Modeling Examination of advanced modeling techniques with emphasis on radiosity. Techniques for rapid interactive display of a complex three-dimensional environment will be developed. Prerequisite: CS 3113 or "B" or better in CS 5032 or CS 5423.

CS 6423. Robotic Software Control Study of robot manipulators from mathematical and programmed control perspectives. Topics include kinematic representation, manipulator positioning, velocity control, and trajectory calculation. Prerequisite: CS 3113 or "B" or better in CS 5032.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hai Jiang, hjiang@astate.edu, (870)680-8164

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6323

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Computer Security

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Survey of the latest security issues in computer systems, including topics such as authentication, access control, database security, operating system security, security management and trust and privacy in computing.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and CS3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032) and Operating Systems (CS3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      Cyber Security Certificate in Computer Science

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Overview
Week 2: Cryptographic Tools
Week 3: User Authentication
Week 4: Access Control
Week 5: Database Security
Week 6: Malicious Software
Week 7: Denial-of-Service Attacks
Week 8: Intrusion Detection
Week 9: Firewalls and Intrusion Prevention Systems
Week 10: Buffer Overflow
Week 11: Operating System Security
Week 12: Trusted Computing
Week 13: Multilevel Security
Week 14: IT Security Management and Risk Assessment

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?

No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?

If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

As computers are ubiquitous, the related security issues should be studied. Students must learn to consider security issues when building computer systems. Academia, industry and governments have high demands on professionals in this field.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. While the department curriculum has included data security for some time, the rapid growth in computer security issues in recent years brings great attention and challenges to both computer science academia and industry, and students need to be well-prepared for it. This new course will focus on subjects to secure data and programs inside computer systems, especially in system software, strengthening the department curriculum in this area.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have a comprehensive understanding about computer systems as well as an analysis ability adequate for current trends in the subject.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

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Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students should know how to analyze security issues in computer systems.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students should understand the design of secure computer systems.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course exams and projects

Outcome 3	Students should know how to protect data in computer system software.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

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***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

Page 375

CS 5823. Scripting Languages Examination of scripting languages compared to conventional programming languages and construction of domain-specific solutions for common problems in GUI, networking, and web programming. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 583V. Internship Supervised work experience participating in application system development in a business/manufacturing environment. Grade earned will be pass or fail. Prerequisites: Permission of the Computer Science faculty, CS 3113 or "B" or better in CS 5032, and either CS 3123 or CS 5113.

CS 6213. Parallel Processing Parallel processing and supercomputer architecture with emphasis on efficient utilization of resources. Prerequisite: CS 3223, or "B" or better in CS 5032 and permission of professor.

CS 6313. Data Security Methods for protection, security, and privacy of data; access controls, authentication, cryptographic controls, information flow controls, security kernels. Security of data in networks. Prerequisite: CS 3233 or "B" or better in CS 5032.

CS 6323. Computer Security Survey of the latest security issues in computer systems, including topics such as authentication, access control, database security, operating system security, security management and trust and privacy in computing. Prerequisite: CS3113 or "B" or better in CS5032, and CS3233.

CS 6413. Solid Modeling Examination of advanced modeling techniques with emphasis on radiosity. Techniques for rapid interactive display of a complex three-dimensional environment will be developed. Prerequisite: CS 3113 or "B" or better in CS 5032 or CS 5423.

CS 6423. Robotic Software Control Study of robot manipulators from mathematical and programmed control perspectives. Topics include kinematic representation, manipulator positioning, velocity control, and trajectory calculation. Prerequisite: CS 3113 or "B" or better in CS 5032.

The bulletin can be accessed at http://www.astate.edu/a/registrar/students/

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

---

1. Contact Person (Name, Email Address, Phone Number)
Dr. Hai Jiang, hjiang@astate.edu, (870)680-8164

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6333

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Network and Internet Security

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Survey of network authentication, network access control, key management in networked systems, network security protocols, network security software and packages, and network security auditing.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and CS4313 or CS5313
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032) and computer networks (CS4313 or CS5313).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      Cyber Security Certificate in Computer Science

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Overview
Week 2: Key Management and Distribution
Week 3: User Authentication
Week 4: Network Access Control
Week 5: Transport-Level Security
Week 6: OpenSSL
Week 7: OpenSSL
Week 8: Wireless Network Security
Week 9: Electronic Mail Security
Week 10: Electronic Mail Security
Week 11: IP Security
Week 12: Firewalls
Week 13: VPN
Week 14: Network Security Auditing

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?

No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?

If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Since the internet has been widely adopted, data traveling on the internet should be protected. Also, the networking interface is one of the major entries used by attackers to compromise computer systems. Academia, industry and governments have high demands on professionals in this field, making network security important for current Computer Science students.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. While the department curriculum has included data security for some time, the rapid growth in network and internet security issues in recent years brings great attention and challenges to both computer science academia and industry. The department's students need to be well-prepared for the networking and Internet aspects of security, and the addition of this course will strengthen the department's curriculum in this area.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students need to have comprehensive understanding about computer networks as well as a developed ability for analysis adequate for the demands of security topics.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become aware of and familiar with the wide variety of network security issues.
Which learning activities are responsible for this outcome?	Course presentations and demonstrations Reviews of related literature
Assessment Measure	Student homework and presentations

Outcome 2	Students will become familiar with analysis skills pertaining to network security.
Which learning activities are responsible for this outcome?	Student presentations of analysis techniques Projects requiring analysis of security issues
Assessment Measure	Course presentations, exams and projects

Outcome 3	Students will master the corresponding implementation skills for security techniques.
Which learning activities are responsible for this outcome?	In-class demonstrations Projects requiring implementation of security techniques Conduct creation of effective projects
Assessment Measure	Course presentations and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

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CS 6213. Parallel Processing Parallel processing and supercomputer architecture with emphasis on efficient utilization of resources. Prerequisite: CS 3223, or "B" or better in CS 5032 and permission of professor.

CS 6313. Data Security Methods for protection, security, and privacy of data; access controls, authentication, cryptographic controls, information flow controls, security kernels. Security of data in networks. Prerequisite: CS 3233 or "B" or better in CS 5032.

CS 6333. Network and Internet Security Survey of network authentication, network access control, key management in networked systems, network security protocols, network security software and packages, and network security auditing. Prerequisite: CS3113 or "B" or better in CS5032, and CS 4313 or CS 5313.

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CS 6423. Robotic Software Control Study of robot manipulators from mathematical and programmed control perspectives. Topics include kinematic representation, manipulator positioning, velocity control, and trajectory calculation. Prerequisite: CS 3113 or "B" or better in CS 5032.

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New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

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Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

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David F. Gilmore 10/6/2017
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Anne A. Grippo 10/6/2017
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ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hai Jiang, hjiang@astate.edu, (870)680-8164

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6343

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Cloud Security

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Survey of the major security aspects of cloud computing and the corresponding mechanisms, including cloud security management, architecture and measurement as well as virtual machine security and real world cloud security examples.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and CS3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032) and operating systems (CS3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

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Please explain.

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If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Overview of Cloud Computing
Week 2: Policy Management in the Cloud
Week 3: Cloud Security Risk Assessment
Week 4: Cloud Security Access Control
Week 5: Cloud Security Key Management: Cloud User Control
Week 6: Cloud Security Architecture
Week 7: Boundary Control in Cloud: Geo-Tagging and Asset Tagging
Week 8: Side-Channel Attacks
Week 9: Cloud Computing Software Security
Week 10: Identity Management and Control for Clouds
Week 11: Virtual Machine Security
Week 12: Trust Calculation in Cloud Computing
Week 13: Big Data Security
Week 14: Evaluating Cloud Security

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Cloud computing has been adopted by both academia and industry. Cloud professionals are in high demand. Since security in the cloud is the major obstacle in cloud computing, the training on cloud security will equip students with required knowledge.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. The department curriculum has included data security for some time, but the rapid growth in cloud security issues in recent years brings great attention and challenges to computer science academia and industry. This new course will use clouds to demonstrate infrastructure security, and it will strengthen the security field in the department's curriculum.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have comprehensive understanding about computer systems and system software.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
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The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

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Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
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Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students should know how to analyze security issues in clouds.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course exams and projects

Outcome 2	Students should know how to follow the security policies of Cloud Computing.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course exams and projects

Outcome 3	Students should understand the conventions in Cloud Computing and know how to implement them.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

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2017-2018 Graduate Bulletin

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New Course Proposal Form

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[X] **Graduate Council**

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Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

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Department Curriculum Committee Chair

ENTER DATE...
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General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Hung-Chi Su, suh@astate.edu, (870)680-8119

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6443

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Machine Learning

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
The theory and practice of machine learning from a variety of perspectives. Topics include supervised learning (classification, regression); unsupervised learning (clustering, dimensionality reduction); reinforcement learning; and computational learning theory.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and STAT3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032) and statistics (STAT3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
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    If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Introduction and Prerequisites Review
Week 2: Supervised Learning
Week 3: Parametric Methods
Week 4: Multivariate Methods
Week 5: Dimensionality Reduction
Week 6: Clustering
Week 7: Nonparametric Methods
Week 8: Linear Discrimination
Week 9: Multilayer Perceptrons
Week 10: Support Vector Machine
Week 11: Kernel Machines
Week 12: Graphical Models
Week 13: Hidden Markov Models
Week 14: Bayesian Networks

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

There is a great demand in industry and academia for the skills in machine learning, particularly as it relates to data science; this course provides students in-depth study in both its theory and its application. Student will develop an understanding of machine learning techniques and the associated computer programming. Student will also develop improved problem-solving skills and facility with applied mathematics and statistics.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. The department must prepare students for work and continuing advancement in the industrial application of and computing research in machine learning. This proposed course will expand the field of data science in the current CS curriculum.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have a comprehensive understanding of analysis of algorithms, data structures, statistics, and programming skills.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will get familiar with the theory and practice of machine learning
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Perform analytic evaluation of example algorithms
Assessment Measure	Course presentations and exams

Outcome 3	Students will get experience which will develop implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

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CS 6433. Natural Language Processing Data representations used in programming computers to interpret and to generate natural language text. Background from linguistics, theoretical computer science and lexical analysis; structures and algorithms for syntactical analysis, semantic analysis, and knowledge representation. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6443. Machine Learning The theory and practice of machine learning from a variety of perspectives. Topics include supervised learning (classification, regression); unsupervised learning (clustering, dimensionality reduction); reinforcement learning; and computational learning theory. Prerequisite: CS3113 or "B" or better in CS5032, and STAT3233.

CS 6513. Data Compression and Indexing Compressing, indexing and querying large collections of text and image data. Prerequisite: CS 5123 or CS 5713 or "B" or better in CS 5032 and permission of instructor.

CS 6713. Advanced Analysis of Algorithms Theoretical space and time requirements for algorithms. Prerequisite: CS 5713.

CS 6723. Computability Theory Turing machines and equivalent models of computation. The universal Turing machine and unsolvability results. Study of computable functions. Problem classification and hierarchy. Prerequisite: CS 5723 or "B" or better in CS 5032 and permission of professor.

CS 6813. Seminar in Computer Science Current topics in Computer Science. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Hung-Chi Su, suh@astate.edu, (870)680-8119

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6523

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Data Mining Techniques

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Exploration of the algorithms and methodologies in knowledge discovery and data mining used to find information or knowledge of interest in large data sets efficiently.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, and STAT3233
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032), and statistics (STAT3233).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      Data Science Certificate in Computer Science

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: introduction and data types
Week 2: data exploring and preprocessing
Week 3: classification and decision trees
Week 4: overfitting models and evaluating the performance of a classifier
Week 5: rule-based classifiers and Bayesian classifiers
Week 6: artificial neural networks
Week 7: ensemble methods and class imbalance problems
Week 8: association analysis
Week 9: rule generation
Week10: more on association analysis
Week 11: cluster analysis and k-means
Week 12: agglomerative hierarchical clustering
Week 13: the DBSCAN algorithm and cluster evaluation
Week 14: anomaly detection

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?

No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?

If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

There is a great demand in industry and academia for the skills needed for discovering useful information in large data sets or databases. Student will become familiar with the associated data mining techniques and computer programming. Student will also develop improved problem-solving skills and facility with applied mathematics and statistics.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. The department needs to prepare students for work and continuing advancement in computing research on data mining and knowledge discovery. This proposed course will strengthen the field of data mining in the current CS curriculum.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have comprehensive understanding about analysis of algorithms, data structures, statistics, and programming skills.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become familiar with the algorithms and techniques of knowledge discovery and data mining
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

Outcome 3	Students will get experience which will develop their implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

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CS 6433. Natural Language Processing Data representations used in programming computers to interpret and to generate natural language text. Background from linguistics, theoretical computer science and lexical analysis; structures and algorithms for syntactical analysis, semantic analysis, and knowledge representation. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6513. Data Compression and Indexing Compressing, indexing and querying large collections of text and image data. Prerequisite: CS 5123 or CS 5713 or "B" or better in CS 5032 and permission of instructor.

CS 6523. Data Mining Techniques Exploration of the algorithms and methodologies in knowledge discovery and data mining used to find information or knowledge of interest in large data sets efficiently. Prerequisite: CS 3113 or "B" or better in CS 5032, and STAT3233.

CS 6713. Advanced Analysis of Algorithms Theoretical space and time requirements for algorithms. Prerequisite: CS 5713.

CS 6723. Computability Theory Turing machines and equivalent models of computation. The universal Turing machine and unsolvability results. Study of computable functions. Problem classification and hierarchy. Prerequisite: CS 5723 or "B" or better in CS 5032 and permission of professor.

CS 6813. Seminar in Computer Science Current topics in Computer Science. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Hung-Chi Su, suh@astate.edu, (870)680-8119

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6543

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Advanced Database Systems

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
A study of the internals of database systems as a basis for system implementation and performance tuning. Topics include database system architecture, transactions and serializability, recovery from errors, query optimization, and new technologies in database systems.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032, CS3233, and CS4543 or CS5543
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032), operating systems (CS3233) and database systems (CS4543 or CS5543).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
      Data Science Certificate in Computer Science

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: data storage
Week 2: indexing structure basics
Week 3: more indexing structures
Week 4: hashing tables & multi-dimensional indexing structures
Week 5: more multi-dimensional indexing structures
Week 6: query processing
Week 7: more query processing (with indexing structures)
Week 8: query parsing and cost
Week 9: query optimization
Week 10: coping with system failures
Week 11: more on coping with system failures
Week 12: concurrency control
Week 13: more on concurrency control
Week 14: transaction management

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course addresses the field of database systems in research and provides advanced knowledge to meet industry expectations. Students of this course will develop an advanced understanding of the internals of database systems as a basis for system implementation and research work.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. The department needs to prepare students for work and continuing advancement in computing research on database systems. The proposed course will strengthen the department's current database curriculum.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have a comprehensive understanding about computer systems as well as programming skills.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become familiar with storage techniques, efficient data retrieval, query optimization, and concurrent control in database systems.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

Outcome 3	Students will get experience which will develop their implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

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- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

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Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

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CS 6433. Natural Language Processing Data representations used in programming computers to interpret and to generate natural language text. Background from linguistics, theoretical computer science and lexical analysis; structures and algorithms for syntactical analysis, semantic analysis, and knowledge representation. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6513. Data Compression and Indexing Compressing, indexing and querying large collections of text and image data. Prerequisite: CS 5123 or CS 5713 or "B" or better in CS 5032 and permission of instructor.

CS 6543. Advanced Database Systems To study the internals of database systems as a basis for system implementation and performance tuning, including the topics of database system architecture, transactions and serializability, recovery from errors, query optimization, and new technologies in database systems. Prerequisite: CS 3113 or "B" or better in CS 5032, CS3233, and CS4543 or CS5543.

CS 6713. Advanced Analysis of Algorithms Theoretical space and time requirements for algorithms. Prerequisite: CS 5713.

CS 6723. Computability Theory Turing machines and equivalent models of computation. The universal Turing machine and unsolvability results. Study of computable functions. Problem classification and hierarchy. Prerequisite: CS 5723 or "B" or better in CS 5032 and permission of professor.

CS 6813. Seminar in Computer Science Current topics in Computer Science. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 7/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 7/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

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Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year
Fall, 2018; 2018-2019 graduate bulletin

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CSED 5043

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Principles of Computer Programming

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

Programming methodology, procedural abstraction, top-down design, object-oriented techniques, fundamental data structures such as linked lists, stacks, queues and binary trees, searching and sorting techniques, and an introduction to algorithm analysis, all with an emphasis on pedagogy in the secondary school.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **No** Are there any prerequisites?
   a. If yes, which ones?
   b. Why or why not?

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

Not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?

(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.

11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
   Master of Science in Education in Computer Science;
   Graduate Certificate in Computer Science Education

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?

If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 01 *introduction to C++; programming errors, variables and user input*
Week 02 *selection and repetition*
Week 03 *functions; value and reference parameters*
Week 04 *arrays; sorting and searching*
Week 05 *characters and strings*
Week 06 *pointers and dynamic memory allocation*
Week 07 *classes and objects*
Week 08 *composition of objects*
Week 09 *singly- and doubly-linked lists; circular lists*
Week 10 *stacks and queues; priority queues*
Week 11 *the binary search tree and recursion*
Week 12 *inheritance; virtual functions and polymorphism*
Week 13 *random access files; hashing*
Week 14 *graph algorithms*

18. Special features (e.g. labs, exhibits, site visitations, etc.)

N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course will serve as part of the core of the department's graduate certificate in computer science education as well as its master of science in education. The student will become familiar with core computer programming concepts and their instruction, preparing them for presentation of this material in the high school setting.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

The department has accepted its responsibility to support the governor's Computer Science Initiative to offer computer-coding classes to all Arkansas high schools. Providing this course, and in turn the certificate and degree requiring it, will help prepare more teachers to instruct in this topic in high school; further, in the long term the department will benefit from an increased number of students graduating from high school with a fuller awareness of, facility with, and interest in computer science.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

The student taking this course will have already completed a bachelor's degree in education.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. Students will have a broad exposure to concepts in computer science.
2. Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
3. Students will be able to communicate computer science concepts with clarity and effective exposition.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	Students will have a broad exposure to concepts in computer science.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 2 (from question #23)	Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
Assessment Measure	Comprehensive examinations, student exit interview, and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 3 (from question #23)	Students will be able to communicate computer science concepts with clarity and effective exposition.
Assessment Measure	Comprehensive examinations, student exit interview and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will get familiar with the theory and practice of computer programming.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

Outcome 3	Students will get experience which will develop their implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

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- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
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Page 376

CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

CS 689V. Thesis

Computer Science Education (CSED)

CSED 5043. Principles of Computer Programming Programming methodology, procedural abstraction, top-down design, object-oriented techniques, fundamental data structures such as linked lists, stacks, queues and binary trees, searching and sorting techniques, and an introduction to algorithm analysis, all with an emphasis on pedagogy in the secondary school.

DEPARTMENT OF MATHEMATICS AND STATISTICS

Mathematics (MATH)

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

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Department Curriculum Committee Chair

ENTER DATE...
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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year
Fall, 2018; 2018-2019 graduate bulletin

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CSED 5231

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Principles of Operating Systems

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

Policies, design issues, and implementation techniques for operating system software. Synchronization, process scheduling, memory and storage management, and system protection with an emphasis on pedagogy in the secondary school.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS 3113 or "B" or better in CSED 5043.
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in computer programming and data structures (CS3113 or CSED 5043).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

Not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

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16. **No** Does this course affect another program?
    If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 01	*overview of operating systems, functionalities and characteristics*
Week 02	*hardware concepts related to OS, CPU states, I/O channels, microprogramming*
Week 03	*the process: operations, states, concurrency, control blocks, context*
Week 04	*UNIX process control and management, PCB, signals, forks and pipes*
Week 05	*interrupt processing, operating system organization, OS kernel FLIH, dispatcher*
Week 06	*job and processor scheduling, scheduling algorithms, process hierarchies*
Week 07	*mutual exclusion, process co-operation, producer and consumer processes*
Week 08	*semaphores: definition, init, wait, signal operations*
Week 09	*critical regions, Conditional Critical Regions, Monitors, Ada Tasks*
Week 10	*interprocess Communication (IPC), Message Passing, Direct and Indirect*
Week 11	*deadlock: prevention, detection, avoidance, banker's algorithm*
Week 12	*memory organization and management, storage allocation*
Week 13	*virtual memory concepts, paging and segmentation, address mapping*
Week 14	*file organization: blocking and buffering, file descriptor, directory structure*

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. .

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course will serve as part of the core of the department's graduate certificate in computer science education as well as its master of science in education. The student will become familiar with core operating systems concepts and their instruction, preparing them for presentation of this material in the high school setting.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

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c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

The student taking this course will have already completed a bachelor's degree in education.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

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Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 2 (from question #23)	Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
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Program-Level Outcome 3 (from question #23)	Students will be able to communicate computer science concepts with clarity and effective exposition.
Assessment Measure	Comprehensive examinations, student exit interview and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will get familiar with operating systems theory and practice.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

Outcome 3	Students will get experience which will develop their implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

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Instructions

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- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

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CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

CS 689V. Thesis

Computer Science Education (CSED)

CSED 5231, Principles of Operating Systems Policies, design issues, and implementation techniques for operating system software. Synchronization, process scheduling, memory and storage management, and system protection with an emphasis on pedagogy in the secondary school. Prerequisite: CS 3113 or "B" or better in CSED 5043.

DEPARTMENT OF MATHEMATICS AND STATISTICS

Mathematics (MATH)

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

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Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 7/24/2017
Department Chair:

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Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year
Fall, 2018; 2018-2019 graduate bulletin

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CSED 5241

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Principles of Computer Organization

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

Basic principles of computer architectural design with an emphasis on pedagogy in the secondary school.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS 3113 or "B" or better in CSED 5043.
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in computer programming (CS3113 or CSED 5043).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

Not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

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Please explain.

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   a. If yes, what program?
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13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?

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15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 01	*history*
Week 02	*Boolean logic*
Week 03	*information representation*
Week 04	*more information representation*
Week 05	*sequential logic*
Week 06	*machine language*
Week 07	*machine language examples*
Week 08	*processor architecture*
Week 09	*processor architecture examples*
Week 10	*assembly and assemblers*
Week 11	*assembly language programming*
Week 12	*memory hierarchy*
Week 13	*more on memory hierarchy*
Week 14	*future trends*

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course will serve as part of the core of the department's graduate certificate in computer science education as well as its master of science in education. The student will become familiar with core computer architectural concepts and their instruction, preparing them for presentation of this material in the high school setting.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

The department has accepted its responsibility to support the governor's Computer Science Initiative to offer computer-coding classes to all Arkansas high schools. Providing this course, and in turn the certificate and degree requiring it, will help prepare more teachers to instruct in this topic in high school; further, in the long term the department will benefit from an increased number of students graduating from high school with a fuller awareness of, facility with, and interest in computer science.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

The student taking this course will have already completed a bachelor's degree in education.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. Students will have a broad exposure to concepts in computer science.
2. Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
3. Students will be able to communicate computer science concepts with clarity and effective exposition.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	Students will have a broad exposure to concepts in computer science.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 2 (from question #23)	Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
Assessment Measure	Comprehensive examinations, student exit interview, and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 3 (from question #23)	Students will be able to communicate computer science concepts with clarity and effective exposition.
Assessment Measure	Comprehensive examinations, student exit interview and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will get familiar with the theory and practice of computer architecture.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

Outcome 3	Students will get experience which will develop their implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

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Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

Page 376

CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

CS 689V. Thesis

Computer Science Education (CSED)

CSED 5241, Principles of Computer Organization Basic principles of computer architectural design with an emphasis on pedagogy in the secondary school. Prerequisite: CS 3113 or "B" or better in CSED 5043.

DEPARTMENT OF MATHEMATICS AND STATISTICS

Mathematics (MATH)

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 7/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 7/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

---

1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year
Fall, 2018; 2018-2019 graduate bulletin

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CSED 5731

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Principles of Abstract Structures

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

Foundational computer science concepts, including algorithm complexity and structures such as sets, trees, and graphs, with an emphasis on pedagogy in the secondary school.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **No** Are there any prerequisites?
   a. If yes, which ones?
   b. Why or why not?

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

Not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?

(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.

11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
   Master of Science in Education in Computer Science;
   Graduate Certificate in Computer Science Education

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?

If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 01 *algorithm definition*
Week 02 *algorithm examples*
Week 03 *big-O and the growth of functions*
Week 04 *algorithm complexity*
Week 05 *best and worst case analysis*
Week 06 *average case analysis*
Week 07 *recursion*
Week 08 *set theory*
Week 09 *implementing set operations*
Week 10 *trees*
Week 11 *forests*
Week 12 *graphs*
Week 13 *graph modeling*
Week 14 *languages, grammars, finite state machines, Turing machines*

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources
a. Will this require additional faculty, supplies, etc.?
No.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course will serve as part of the core of the department's graduate certificate in computer science education as well as its master of science in education. The student will become familiar with core abstract computer concepts and their instruction, preparing them for presentation of this material in the high school setting.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

The department has accepted its responsibility to support the governor's Computer Science Initiative to offer computer-coding classes to all Arkansas high schools. Providing this course, and in turn the certificate and degree requiring it, will help prepare more teachers to instruct in this topic in high school; further, in the long term the department will benefit from an increased number of students graduating from high school with a fuller awareness of, facility with, and interest in computer science.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

The student taking this course will have already completed a bachelor's degree in education.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. Students will have a broad exposure to concepts in computer science.
2. Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
3. Students will be able to communicate computer science concepts with clarity and effective exposition.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	Students will have a broad exposure to concepts in computer science.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 2 (from question #23)	Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
Assessment Measure	Comprehensive examinations, student exit interview, and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 3 (from question #23)	Students will be able to communicate computer science concepts with clarity and effective exposition.
Assessment Measure	Comprehensive examinations, student exit interview and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will get familiar with the theory of foundational programming concepts.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

Outcome 3	Students will get experience which will develop their implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

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You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

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CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

CS 689V. Thesis

Computer Science Education (CSED)

CSED 5731, Principles of Abstract Structures Foundational computer science concepts, including algorithm complexity and structures such as sets, trees, and graphs, with an emphasis on pedagogy in the secondary school.

DEPARTMENT OF MATHEMATICS AND STATISTICS

Mathematics (MATH)

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 7/24/2017
Department Curriculum Committee Chair

ENTER DATE...
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Hung-Chi Su 7/24/2017
Department Chair:

ENTER DATE...
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David F. Gilmore 10/6/2017
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Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year
Fall, 2018; 2018-2019 graduate bulletin

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CSED 6113

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Principles of Software Engineering

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

Techniques of design, implementation, quality assurance, and maintenance for large scale software systems with an emphasis on pedagogy in the secondary school.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS 3113 or "B" or better in CSED 5043.
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CSED5043).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

Not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?

(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.

11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
   Master of Science in Education in Computer Science

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
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15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 01 *Origins of Software Engineering*
Week 02 *System and Software Engineering*
Week 03 *Software Requirements*
Week 04 *Software Architecture*
Week 05 *Software Design and Development*
Week 06 *Formal Methods and Coding*
Week 07 *Validation*
Week 08 *Verification*
Week 09 *Testing*
Week 10 *Quality*
Week 11 *Reliability and Safety*
Week 12 *Software Process*
Week 13 *Management, Maintenance, and Reuse*
Week 14 *Software Engineering Environments*

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course will serve as part of the core of the department's master of science in education. The student will become familiar with foundational concepts in software engineering and their instruction, preparing the student for presentation of this material in the high school setting.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

The department has accepted its responsibility to support the governor's Computer Science Initiative to offer computer-coding classes to all Arkansas high schools. Providing this course, and in turn the degree requiring it, will help prepare more teachers to instruct in this topic in high school; further, in the long term the department will benefit from an increased number of students graduating from high school with a fuller awareness of, facility with, and interest in computer science.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

The student taking this course will have already completed a bachelor's degree in education.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

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Program-Level Outcome 2 (from question #23)	Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
Assessment Measure	Comprehensive examinations, student exit interview, and employer surveys
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Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 3 (from question #23)	Students will be able to communicate computer science concepts with clarity and effective exposition.
Assessment Measure	Comprehensive examinations, student exit interview and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will get familiar with the theory and practice of software engineering.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

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Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

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(Repeat if needed for additional outcomes)

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- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

Page 376

CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

CS 689V. Thesis

Computer Science Education (CSED)

CSED 6113. Principles of Software Engineering Techniques of design, implementation, quality assurance, and maintenance for large scale software systems with an emphasis on pedagogy in the secondary school. Prerequisites: CS 3113 or "B" or better in CSED 5043.

DEPARTMENT OF MATHEMATICS AND STATISTICS

Mathematics (MATH)

MATH 5123. Special Topics in Math and Science Education Content-specifi topics as they are related to mathematics and Science education. Does NOT apply to credit toward coursework required for the MS or MSE in Mathematics.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

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Department Curriculum Committee Chair

ENTER DATE...
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Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year
Fall, 2018; 2018-2019 graduate bulletin

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CSED 6713

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Principles of Analysis of Algorithms

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

The analysis of space and time requirements of algorithms with an emphasis on pedagogy in the secondary school.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS 3113 or "B" or better in CSED 5043, and MATH 2214.
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in algorithms and data structures (CS3113 or CSED 5043) as well as mathematical maturity (MATH 2214).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

Not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?

(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.

11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
   Master of Science in Education in Computer Science

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 01	*best, average, and worst case analysis*
Week 02	*space vs time analysis examples*
Week 03	*stable matching*
Week 04	*asymptotic notation*
Week 05	*BFS and DFS algorithms*
Week 06	*greedy algorithms*
Week 07	*heaps, MST, shortest path*
Week 08	*divide and conquer*
Week 09	*dynamic programming*
Week 10	*network flow - max flow*
Week 11	*network flow - circulation*
Week 12	*NP-completeness*
Week 13	*approximation algorithms*
Week 14	*more approximation algorithms*

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course will serve as part of the core of the department's master of science in education. The student will become familiar with concepts of the analysis of algorithms and their instruction, preparing the student for presentation of this material in the high school setting.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

The department has accepted its responsibility to support the governor's Computer Science Initiative to offer computer-coding classes to all Arkansas high schools. Providing this course, and in turn the degree requiring it, will help prepare more teachers to instruct in this topic in high school; further, in the long term the department will benefit from an increased number of students graduating from high school with a fuller awareness of, facility with, and interest in computer science.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

The student taking this course will have already completed a bachelor's degree in education.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. Students will have a broad exposure to concepts in computer science.
2. Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
3. Students will be able to communicate computer science concepts with clarity and effective exposition.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	Students will have a broad exposure to concepts in computer science.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 2 (from question #23)	Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
Assessment Measure	Comprehensive examinations, student exit interview, and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 3 (from question #23)	Students will be able to communicate computer science concepts with clarity and effective exposition.
Assessment Measure	Comprehensive examinations, student exit interview and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will get familiar with the theory and practice of analyzing algorithms.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

Outcome 3	Students will get experience which will develop their implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

Page 376

CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

CS 689V. Thesis

Computer Science Education (CSED)

CSED 6713. Principles of Analysis of Algorithms The analysis of space and time requirements of algorithms with an emphasis on pedagogy in the secondary school. Prerequisites: CS 3113 or "B" or better in CSED 5043, and MATH 2214.

DEPARTMENT OF MATHEMATICS AND STATISTICS

Mathematics (MATH)

MATH 5123. Special Topics in Math and Science Education Content-specifi topics as they are related to mathematics and Science education. Does NOT apply to credit toward coursework

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 7/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 7/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

2. Proposed Starting Term and Bulletin Year
Fall, 2018; 2018-2019 graduate bulletin

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CSED 6723

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Principles of Automata Theory

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

Study formal languages and equivalent models of computation with an emphasis on pedagogy in the secondary school.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS 3113 or "B" or better in CSED 5043.
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CSED5043).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

Not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?

(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.

11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **Yes** Is this course in support of a new program?
   a. If yes, what program?
   Master of Science in Education in Computer Science

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
   a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?

If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 01	*overview of automata theory; sets, relations, and functions*
Week 02	*proofs, algorithms, languages*
Week 03	*deterministic and nondeterministic finite automata*
Week 04	*regular expressions and regular languages*
Week 05	*equivalence of DFA's, NFA's and regular expressions*
Week 06	*context-free grammars*
Week 07	*parse trees, pushdown automata*
Week 08	*pushdown automata and context-free grammars*
Week 09	*Turing machines*
Week 10	*extensions of Turing machines; nondeterministic Turing machines*
Week 11	*decidability, the Church-Turing thesis*
Week 12	*universal Turing machines*
Week 13	*the halting problem; P and NP*
Week 14	*Cook's theorem*

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This course will serve as part of the core of the department's master of science in education. The student will become familiar with foundational concepts of computer science and their instruction, preparing the student for presentation of this material in the high school setting.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

The department has accepted its responsibility to support the governor's Computer Science Initiative to offer computer-coding classes to all Arkansas high schools. Providing this course, and in turn the degree requiring it, will help prepare more teachers to instruct in this topic in high school; further, in the long term the department will benefit from an increased number of students graduating from high school with a fuller awareness of, facility with, and interest in computer science.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

The student taking this course will have already completed a bachelor's degree in education.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. Students will have a broad exposure to concepts in computer science.
2. Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
3. Students will be able to communicate computer science concepts with clarity and effective exposition.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	Students will have a broad exposure to concepts in computer science.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 2 (from question #23)	Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
Assessment Measure	Comprehensive examinations, student exit interview, and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Program-Level Outcome 3 (from question #23)	Students will be able to communicate computer science concepts with clarity and effective exposition.
Assessment Measure	Comprehensive examinations, student exit interview and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will get familiar with the foundational concepts of automata theory.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Demonstrate the analysis results in presentations and exams
Assessment Measure	Course exams and presentations

Outcome 3	Students will get experience which will develop their implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

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- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

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CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

CS 689V. Thesis

Computer Science Education (CSED)

CSED 6723. Principles of Automata Theory Study formal languages and equivalent models of computation with an emphasis on pedagogy in the secondary school. Prerequisites: CS 3113 or "B" or better in CSED 5043.

DEPARTMENT OF MATHEMATICS AND STATISTICS

Mathematics (MATH)

MATH 5123. Special Topics in Math and Science Education Content-specifi topics as they are related to mathematics and Science education. Does NOT apply to credit toward coursework

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 7/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 7/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Hung-Chi Su, suh@astate.edu, (870)680-8119

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 5613

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Mobile Application Development

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Creation of mobile applications for iOS and Android devices through a project-based environment, deployment of applications to mobile hardware and how to effectively work in a team environment for application development.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032
   b. Why or why not?
      The material covered by the course requires significant experience in computer programming and an understanding of advanced programming concepts.

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*
not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **Yes** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **No** Is this course in support of a new program?
   a. If yes, what program?

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
    a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
    If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
    If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1	Introduction to Mobile technologies and programming environments
Week 2	Programming languages and tools
Week 3	Mobile Application Design
Week 4	Model-View-Controller and User Interfaces
Week 5	Building Controls
Week 6	Building Controls
Week 7	Team Project Software Life Cycle
Week 8	Mobile Media
Week 9	Mobile Communication
Week 10	Other Mobile Technologies
Week 11	Mobile Application Deployment
Week 12	Testing and Debugging Mobile Apps
Week 13	Portability Issues
Week 14	Project Presentations

18. Special features (e.g. labs, exhibits, site visitations, etc.)
None

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Mobile application programming has seen a tremendous amount of growth as a result of the ever-increasing use of mobile devices. The course serves to prepare students majoring in Computer Science to be professional application developers on mobile platforms.

Goals Include:

- ability to understand and describe the architecture of a mobile application.
- ability to understand, describe and use the MVC interface architecture.
- ability to understand and use event programming for mobile applications.
- ability to understand and construct a user interface for a mobile application.
- ability to understand and construct the controls for a mobile application.
- ability to understand and integrate a database within a mobile application.
- ability to understand and integrate communications within a mobile application.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The state of the art in the software industry has seen rapid growth in mobile application programming in recent years; computer science students need to be prepared for this new development paradigm and current in state-of-the-art technologies. This will give students better insights into the current state of industry than traditional native-platform focused programming courses alone.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

The graduate level of the course corresponds to the requirement that students already be well-versed in the fundamentals of programming, and ready to learn about applications of that knowledge in a modern environment.

This course differs from the undergraduate level of the course in the following ways;

- graduate students will serve as team leaders in programming projects
- graduate students will play the roles of clients with which undergraduate students will have to interact
- graduate students will design problem scenarios with which to attempt to "break" applications in order to generate "weekend/holiday/middle-of-the-night" application failures

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will be able to understand and describe the architecture of a mobile application and the MVC interface as well as event programming.
Which learning activities are responsible for this outcome?	The construction and presentation of a mobile program for the course project will be used to assess the student's understanding of the architecture and ability to describe the processes and procedures in the application construction. Both the MVC interface and event programming are essential parts of the course project.
Assessment Measure	A rubric is used to assess the student outcome and a 75% has been designated as a passing score for this outcome.

Outcome 2	Students will be able to understand and construct a user interface and controls for a mobile application.
Which learning activities are responsible for this outcome?	The project will be used in the assessment of the outcome. Both a user interface and controls are essential parts of the course project.
Assessment Measure	A rubric is used to assess the student outcome as part of the presentation and construction of the project and a 75% has been designated as a passing score for this outcome.

Outcome 3	Students will be able to understand and integrate a database and communications within a mobile application.
Which learning activities are responsible for this outcome?	The project will be used in the assessment of the outcome. Both a database and communications are essential parts of the course project.
Assessment Measure	A rubric is used to assess the student outcome as part of the construction of the project and a 75% has been designated as a passing score for this outcome.

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

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CS 5423. Computer Graphics II Continuation of Computer Graphics I. Techniques for generation of realistic solid models are examined. Topics include hidden surface removal, shading, shadowing, reflection, refraction, and color theory. Prerequisite: CS 5413.

CS 5433. Artificial Intelligence Representation of knowledge and introduction to a functional programming language; search methods and control. Typical applications of artificial intelligence. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5543. Database Systems Topics include major database models; relational algebra; data independence and database normalization; entity relationship model; security, integrity, recovery and concurrency issues; physical organization of a database. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5613. Mobile Application Development Creation of mobile applications for iOS and Android devices through a project-based environment, deployment of applications to mobile hardware and how to effectively work in a team environment for application development. Prerequisite: CS 3113 or "B" or better in CS 5032 or consent of instructor.

CS 5713. Analysis of Algorithms The analysis of space and time requirements of algorithms. Worst-case and average case studies. Greedy algorithms and divide-and-conquer algorithms examined. Tractable and intractable algorithms surveyed. Prerequisites: CS 3113 or "B" or better in CS 5032, and MATH 2214.

CS 5723. Automata Theory Study formal languages and equivalent models of computation. Finite state automata and regular expressions. Push-down automata and context free grammars. Pumping lemmas and closure properties. Turing Machines. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 5823. Scripting Languages Examination of scripting languages compared to conventional programming languages and construction of domain-specific solutions for common problems in GUI, networking, and web programming. Prerequisite: CS 3113 or "B" or better in CS 5032.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 7/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 7/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

---

1. Contact Person (Name, Email Address, Phone Number)
Edward Hammerand, hammerand@astate.edu, (870)680-8109

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6463

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Image Processing

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Survey of digital image processing topics such as image transforms, noise reduction and image enhancement techniques, filtering, image restoration methods, image compression, segmentation, edge detection, and feature extraction.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*
Not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **No** Is this course in support of a new program?
   a. If yes, what program?

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
    a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
    If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
    If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: introduction to digital image processing
Week 2: intensity transformations, histogram processing
Week3: spatial filtering, filtering in the frequency domain
Week 4: more filtering in the frequency domain
Week 5: image restoration
Week 6: image reconstruction
Week 7: color image processing
Week 8: wavelets and multiresolution processing
Week 9: image compression
Week 10: erosion and dilation; the hit-or-miss transformation
Week 11: boundary extraction; hole filling; extraction of connected components
Week 12: point, line and edge detection; thresholding
Week 13: boundary and regional descriptors
Week 14: object recognition

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

In addition to being an important subject unto itself, image processing is an increasingly important component of other areas of computer science such as artificial intelligence, robotics and machine vision. The primary goal of this course is to expose students to various aspects of digital image processing and stimulate students' interest in its research areas. Students are will become conversant with topics in the field and develop facility with its techniques and algorithms.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. The importance of image processing to computer science increases as hardware technologies continue to develop in support of areas such robotics and machine vision. The department needs to provide exposure to students in preparation for work and research opportunities in this growing field.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have comprehensive understanding of and facility with algorithms, data structures, and computer programming in general.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will become familiar with the theory and practice of image processing.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 2	Students will master the corresponding analytical skills.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Perform analytic evaluation of example algorithms
Assessment Measure	Course presentations and exams

Outcome 3	Students will get experience which will develop their implementation skills.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Conduct effective projects
Assessment Measure	Course homework, presentations, exams and projects

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

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Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

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CS 6433. Natural Language Processing Data representations used in programming computers to interpret and to generate natural language text. Background from linguistics, theoretical computer science and lexical analysis; structures and algorithms for syntactical analysis, semantic analysis, and knowledge representation. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6463. Image Processing Survey of digital image processing topics such as image transforms, noise reduction and image enhancement techniques, filtering, image restoration methods, image compression, segmentation, edge detection, and feature extraction. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6513. Data Compression and Indexing Compressing, indexing and querying large collections of text and image data. Prerequisite: CS 5123 or CS 5713 or "B" or better in CS 5032 and permission of instructor.

CS 6713. Advanced Analysis of Algorithms Theoretical space and time requirements for algorithms. Prerequisite: CS 5713.

CS 6723. Computability Theory Turing machines and equivalent models of computation. The universal Turing machine and unsolvability results. Study of computable functions. Problem classification and hierarchy. Prerequisite: CS 5723 or "B" or better in CS 5032 and permission of professor.

CS 6813. Seminar in Computer Science Current topics in Computer Science. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Course Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

[X] **New Course or [ ] Experimental Course (1-time offering) (Check one box)**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand 9/24/2017
Department Curriculum Committee Chair

ENTER DATE...
COPE Chair (if applicable)

Hung-Chi Su 9/24/2017
Department Chair:

ENTER DATE...
Head of Unit (If applicable)

David F. Gilmore 10/6/2017
College Curriculum Committee Chair

ENTER DATE...
Undergraduate Curriculum Council Chair

Anne A. Grippo 10/6/2017
College Dean

ENTER DATE...
Graduate Curriculum Committee Chair

ENTER DATE
General Education Committee Chair (If applicable)

ENTER DATE...
Vice Chancellor for Academic Affairs

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1. Contact Person (Name, Email Address, Phone Number)
Xiuzhen Huang, xhuang@astate.edu, (870)680-8116

2. Proposed Starting Term and Bulletin Year
Spring, 2018

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.)
CS 6613

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).
Bioinformatics

5. Brief course description (40 words or fewer) as it should appear in the bulletin.
Application of computational algorithms and approaches to the solution of biological problems. Problems are generally formulated as computational problems on strings, sequences, trees, and graphs.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. **Yes** Are there any prerequisites?
   a. If yes, which ones?
      CS3113 or "B" or better in CS5032
   b. Why or why not?
      The material covered by the course requires understanding of advanced concepts in data structures (CS3113 or CS5032).

b. **No** Is this course restricted to a specific major?
   a. If yes, which major?

7. Course frequency (e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*
Not applicable

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.
Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])
Standard letter

10. **No** Is this course dual listed (undergraduate/graduate)?

11. **No** Is this course cross listed?
(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross listed course.)

11.1 – If yes, please list the prefix and course number of cross listed course.
11.2 – Are these courses offered for equivalent credit?
Please explain.

12. **No** Is this course in support of a new program?
   a. If yes, what program?

13. **No** Does this course replace a course being deleted?
   a. If yes, what course?

14. **No** Will this course be equivalent to a deleted course?
    a. If yes, which course?

15. **Yes** Has it been confirmed that this course number is available for use?
    If no: Contact Registrar's Office for assistance.

16. **No** Does this course affect another program?
    If yes, provide confirmation of acceptance/approval of changes from the Dean, Department Head, and/or Program Director whose area this affects.

Course Details

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

Week 1: Introduction to bioinformatics and biological background
Week 2: Approaches for DNA and EST sequence assembly
Week3: Sequence assembly formulation as the shortest common superstring problem and other heuristic approaches
Week 4: Computational formulations and algorithms for biological sequence comparison problems
Week 5: The longest common subsequence formulation; pairwise and multiple sequence alignment approaches
Week 6: Techniques for biological database search
Week 7: Computational approaches for motif finding problem
Week 8: Motif application in pattern search in large genomes
Week 9: Microarray design
Week 10: Microarray expression data analysis
Week 11: RNA and protein structure prediction
Week 12: RNA and protein structure techniques
Week 13: Graph algorithms for biological pathway analysis
Week 14: Graph algorithms for network analysis

18. Special features (e.g. labs, exhibits, site visitations, etc.)
N/A

19. Department staffing and classroom/lab resources

a. Will this require additional faculty, supplies, etc.?
No. The course has been in the rotation for several semesters as a special topics subject. Its addition to the bulletin as a regular course will have no impact on department staffing or resources.

20. **No** Does this course require course fees?
If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.

Course Justification

21. Justification for course being included in program. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

The primary goal of this course is to expose students to various active areas in bioinformatics and stimulate students' interest in the research areas of bioinformatics and computational biology. From the computer science point of view, many biological problems can be formulated as graph-theoretic problems or other optimization problems. The lectures will present the newest computational approaches as well as classical approaches. The introductory materials will be drawn from the textbook and some research papers. A few other reference books are also listed providing background materials in computer science and biology.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

One part of the mission is to maintain the curriculum with updated technologies. The course addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. Bioinformatics has become a topic of intense interest in computer science, and the department needs to provide exposure to students in preparation for work and research opportunities in bioinformatics.

c. Student population served.

Graduate.

d. Rationale for the level of the course (lower, upper, or graduate).

Students should have comprehensive understanding about analysis of algorithms, data structures, statistics, and programming skills.

Assessment

University Outcomes

22. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Relationship with Current Program-Level Assessment Process

23. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

1. M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
2. M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
3. M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

The course will be assessed along with other graduate courses on the same schedule.

24. Considering the indicated program-level learning outcome/s (from question #23), please fill out the following table to show how and where this course fits into the program's continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Program-Level Outcome 1 (from question #23)	M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 2 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

Program-Level Outcome 3 (from question #23)	M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.
Assessment Measure	Comprehensive examinations and employer surveys
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee.

(Repeat if this new course will support additional program-level outcomes)

Course-Level Outcomes

25. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

Outcome 1	Students will understand how to formulate many challenging biological problems as graph-theoretic problems or other optimization problems.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Accomplish related literature reviews Demonstration of analysis results in presentations
Assessment Measure	Course homework and in-class presentations

Outcome 2	Students will understand how to solve bioinformatics problems by application of the newest computational approaches as well as classical approaches.
Which learning activities are responsible for this outcome?	Accomplish related literature reviews Explanation of solution methodology in presentations
Assessment Measure	Course presentations, exams and projects

Outcome 3	Students will be able to work on the development and application of different computational methods and techniques to the analysis of biological data and systems, which will greatly expand the usefulness of these data to biologists and biomedical researchers.
Which learning activities are responsible for this outcome?	In-class discussion and illustrations Demonstration of analysis results in presentations
Assessment Measure	Course homework, projects and exams

(Repeat if needed for additional outcomes)

Bulletin Changes

Instructions

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- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

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Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

2017-2018 Graduate Bulletin

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CS 6433. Natural Language Processing Data representations used in programming computers to interpret and to generate natural language text. Background from linguistics, theoretical computer science and lexical analysis; structures and algorithms for syntactical analysis, semantic analysis, and knowledge representation. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6513. Data Compression and Indexing Compressing, indexing and querying large collections of text and image data. Prerequisite: CS 5123 or CS 5713 or "B" or better in CS 5032 and permission of instructor.

CS 6613. Bioinformatics Application of computational algorithms and approaches to the solution of biological problems. Problems are generally formulated as computational problems on strings, sequences, trees, and graphs. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6713. Advanced Analysis of Algorithms Theoretical space and time requirements for algorithms. Prerequisite: CS 5713.

CS 6723. Computability Theory Turing machines and equivalent models of computation. The universal Turing machine and unsolvability results. Study of computable functions. Problem classification and hierarchy. Prerequisite: CS 5723 or "B" or better in CS 5032 and permission of professor.

CS 6813. Seminar in Computer Science Current topics in Computer Science. Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 6823. Special Topics Current topics of interest to graduate computer science students. (May be repeated for credit with different subtitle. ONLY six hours with the same course number will count toward the degree.) Prerequisite: CS 3113 or "B" or better in CS 5032.

CS 688V. Independent Study

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Emphasis, Concentration or Option Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand	9/27/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Hung-Chi Su	9/27/2017		ENTER DATE
Department Chair:		**Head of Unitb (If applicable)**	
David F. Gilmore	10/6/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Anne A. Grippo	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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i. Proposed Program Title
Master of Science in Computer Science with Emphasis in Cyber Security

ii. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

iii. Proposed Starting Date
Spring 2018

Bulletin Changes

Instructions

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***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

Insert between page 262 and page 263 of 2017-18 Graduate Bulletin:

Computer Science
Master of Science
Emphasis in Cyber Security

University Requirements:
See Graduate School Degree Policies for additional information (p. 35)
Program Requirements:
Minimum of eighteen hours of 6000 level Computer Science and approved Mathematics and/or Statistics coursework inclusive of thesis.

	Sem. Hrs.
Theory:	3
CS 5133, Compiler	
OR	
CS 5723, Automata Theory	
Systems (select one of the following):	3
CS 5313, Computer Networks	
CS 6213, Parallel Processing	
CS 6243, Distributed Systems	
CS 6253, Heterogeneous Computing	

Algorithms:	3
CS 5713, Analysis of Algorithms	
Emphasis Area (Cyber Security):	
CS 6313, Data Security	3
CS 6323, Computer Security	3
CS 6333, Network and Internet Security	3
Emphasis Elective (select one of the following):	3
CS 6123, Software Security	
CS 6343, Cloud Security	
LAW 6033, Cyberlaw and E-Commerce	
CS Electives	6
CS, MATH, and/or STAT Electives,	6
Subject to the prior approval of the Computer Science Curriculum Committee.	
Sub-total	33
Total Required Hours:	33

EMPHASIS ASSESSMENT

University Goals

1. Please indicate the university-level student learning outcomes for which this new emphasis will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Emphasis Goals

2. Justification for the introduction of the new emphasis. Must include:

a. Academic rationale (how will this emphasis fit into the mission established by the department for the curriculum?)
The emphasis addresses the department's ongoing need to add curriculum reflecting new concepts and technologies in computer science. The rapid growth in security issues in recent years brings great attention and challenges to computer science in academia, industry and government, placing high demands on professionals in this field.

b. List emphasis goals (faculty or curricular goals, specific to the emphasis.)
- Students will possess a strong foundational knowledge of the theory and application of cyber security algorithms and processes.
- Students will have the ability to identify and analyze cyber security problems and to implement the solutions.

d. Student population served.

Graduate students

Emphasis Student Learning Outcomes

3. Please fill out the following table to develop a continuous improvement assessment process for this emphasis.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Note: Best practices suggest an emphasis would have 1 to 3 outcomes.

Outcome 1	A deeper understanding of the theory and application of cyber security algorithms and processes.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6123, Software Security CS 6313, Data Security CS 6323, Computer Security CS 6333, Network and Internet Security CS 6343, Cloud Security
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 2	The ability to apply cyber security analysis techniques to problem identification.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6123, Software Security CS 6313, Data Security CS 6323, Computer Security CS 6333, Network and Internet Security CS 6343, Cloud Security LAW 6033, Cyberlaw and E-Commerce
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 3	The ability to apply cyber security implementation techniques to problem solution.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6123, Software Security CS 6313, Data Security CS 6323, Computer Security CS 6333, Network and Internet Security CS 6343, Cloud Security
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Please repeat as necessary.

LETTER OF NOTIFICATION – 3

NEW OPTION, CONCENTRATION, EMPHASIS

(Maximum 18 semester credit hours of new theory courses and 6 credit hours of new practicum courses)

1. Institution submitting request:
   Arkansas State University

2. Contact person/title:
   Dr. Hung-Chi Su, Chair of the Department of Computer Science

3. Phone number/e-mail address:
   870-680-8119, suh@astate.edu

4. Proposed effective date:
   Spring 2018

5. Title of degree program: (Indicate if the degree listed above is approved for distance delivery)
   Master of Science in Computer Science

6. CIP Code:
   11.0101

7. Degree Code:
   6180

8. Proposed name of new option/concentration/emphasis:
   Cyber Security

9. Reason for proposed action:
   There is a rising demand for students who have expertise in cyber security from corporations, nonprofit companies, and agencies. A digitally literate workforce using technology in a secure manner is imperative to these companies as well as the economy as a whole, and it provides security to an already critical infrastructure.

10. New option/emphasis/concentration objective:
    This emphasis will prepare students to have a set of cybersecurity strategies and skills that can be used in a career to improve performance, add responsibilities, and earn promotions.

11. Provide the following:
    a. Curriculum outline - List of courses in new option/concentration/emphasis – Underline required courses

CS 6313, Data Security
CS 6323, Computer Security
CS 6333, Network and Internet Security
CS 6123, Software Security
CS 6343, Cloud Security
LAW 6033, Cyberlaw and E-Commerce

b. Provide degree plan that includes new option/emphasis/concentration

Course Number	Course Name	Credit Hours
CS 5713	Analysis of Algorithms	3
Choose One of the Following:		
CS 5133	Compilers	3
CS 5723	Automata Theory	
Choose One of the Following:		
CS 5313	Computer Networks	3
CS 6213	Parallel Processing	
CS 6243 (pre fall 2017 #s were 6233 & 6823)	Distributed Systems	
CS 6253 (pre fall 2017 #s were 6223 & 6823)	Heterogeneous Computing (pre fall 2017 name was High Performance Computing)	
Cyber Security Emphasis:		
CS 6313	Data Security	3
CS 6323	Computer Security	3
CS 6333	Network and Internet Security	3
Choose one of the Following:		
CS 6123	Software Security	3
CS 6343	Cloud Security	
LAW 6033	Cyberlaw and E-Commerce	
Electives	Computer Science Electives	6
Electives	Computer Science, Math, or Stats Electives	6
Total		33

c. Total semester credit hours required for option/emphasis/concentration
(Option range: 9–24 semester credit hours)

12

d. New courses and new course descriptions

- CS 6123, Software Security (*originated as subject in previous undergraduate special problem class CS482V*)
  Study of security issues in the software development process, including security management, secure software development lifecycle, language security, and web application security.
- CS 6323, Computer Security (*offered previously as part of a special topics subject, CS6823*)
  Survey of the latest security issues in computer systems, including topics such as authentication, access control, database security, operating system security, security management, and trust and privacy in computing.
- CS 6333, Network and Internet Security (*offered previously as part of a special topics subject, CS6823*)
  Survey of network authentication, network access control, key management in networked systems, network security protocols, network security software and packages, and network security auditing.
- CS 6343, Cloud Security (*offered previously as a special topics subject, CS6823*)
  Survey of the major security aspects of cloud computing and the corresponding mechanisms, including cloud security management, architecture and measurement as well as virtual machine security and real world cloud security examples.

e. Goals and objectives of program option

- Students will possess a strong foundational knowledge of the theory and application of cyber security algorithms and processes.
- Students will have the ability to identify and analyze cyber security problems and to implement the solutions.

f. Expected student learning outcomes

Students will have:

- a deeper understanding of the theory and application of cyber security algorithms and processes.
- the ability to apply cyber security analysis techniques to problem identification.
- the ability to apply cyber security implementation techniques to problem solution.

g. Documentation that program option meets employer needs

According to NetworkWorld, there is a high demand for cybersecurity skill sets, however there is a shortage of individuals with these skills. "According to ESG (Enterprise Strategy Group) research, 46 percent of organizations say they have a 'problematic shortage' of cybersecurity skills in 2016."

http://www.networkworld.com/article/3068177/security/high-demand-cybersecurity-skill-sets.html

According to the Colorado Springs Gazette there is a record 79 percent of American businesses who have reported a cybersecurity incident in 2014. Also, 238,158 job postings for cyber security positions represented a 91% increase from 2010.

http://gazette.com/cybersecurity/education

According to the Bureau of Labor Statistics, the typical education required for an Information Security Analyst position is a Bachelor's degree with a job outlook of 18% increase from 2014-2024.

http://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm

h. Student demand (projected enrollment) for program option

40

i. Name of institutions offering similar program or program option and the institution(s) used as a model to develop the proposed program option

Boston University
George Washington University
Wright State University

Model used to develop program was the A-State M.S. in Computer Science program

12. Institutional curriculum committee review/approval date:

13. Will the new option/emphasis/concentration be offered via distance delivery? No

If yes, indicate mode of distance delivery:

14. Explain in detail the distance delivery procedures to be used:
N/A

15. Specify the amount of additional costs required for program implementation, the source of funds, and how funds will be used.

The subjects of all of the new courses involved have previously been offered as special topics subjects; replacing special topics offerings with regular bulletin courses and revising the course rotation accordingly means that there will be no extra funds required.

16. Provide additional program information if requested by ADHE staff.

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic officer: _____ Date:

Name (printed):

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Emphasis, Concentration or Option Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand	9/27/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Hung-Chi Su	9/27/2017		ENTER DATE
Department Chair:		**Head of Unitb (If applicable)**	
David F. Gilmore	10/6/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Anne A. Grippo	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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i. Proposed Program Title
Master of Science in Computer Science with Emphasis in Data Science

ii. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

iii. Proposed Starting Date
Spring 2018

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

Insert between page 262 and page 263 of 2017-18 Graduate Bulletin:

Computer Science
Master of Science
Emphasis in Data Science

University Requirements:
See Graduate School Degree Policies for additional information (p. 35)
Program Requirements:
Minimum of eighteen hours of 6000 level Computer Science and approved Mathematics and/or Statistics coursework inclusive of thesis.

	Sem. Hrs.
Theory:	3
CS 5133, Compiler	
OR	
CS 5723, Automata Theory	
Systems (select one of the following):	3
CS 5313, Computer Networks	
CS 6213, Parallel Processing	
CS 6243, Distributed Systems	
CS 6253, Heterogeneous Computing	

Algorithms:	3
CS 5713, Analysis of Algorithms	
Emphasis Area (Data Science):	
CS 5543, Database Systems	3
CS 5623, Fundamentals of Data Science	3
CS 6523, Data Mining Techniques	3
Emphasis Elective (select one of the following):	3
CS 6443, Machine Learning	
CS 6543, Advanced Database Systems	
STAT 6433, Time Series Analysis	
STAT 6643, Multivariate Analysis	
STAT 6653, Data Analysis I: Regression Analysis	
STAT 6663, Data Analysis II: Analysis of Variance	
CS Electives	6
CS, MATH, and/or STAT Electives,	6
Subject to the prior approval of the Computer Science Curriculum Committee.	
Sub-total	33
Total Required Hours:	33

EMPHASIS ASSESSMENT

University Goals

1. Please indicate the university-level student learning outcomes for which this new emphasis will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Emphasis Goals

2. Justification for the introduction of the new emphasis. Must include:

a. Academic rationale (how will this emphasis fit into the mission established by the department for the curriculum?)
The emphasis addresses the department's ongoing need to constantly revise the curriculum to reflect new concepts and technologies in computer science. The rapid growth in the data science area in recent years is bringing great attention and challenges to computer science academia, industry and government, placing high demands on professionals in this field.

b. List emphasis goals (faculty or curricular goals, specific to the emphasis.)
- Students will possess a strong foundational knowledge of the theory and application of data science algorithms and processes.
- Students will have the ability to identify and analyze data science problems and to implement solutions for them.

c. Student population served.

Graduate students

Emphasis Student Learning Outcomes

3. Please fill out the following table to develop a continuous improvement assessment process for this emphasis.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Note: Best practices suggest an emphasis would have 1 to 3 outcomes.

Outcome 1	A deeper understanding of the theory and application of data science algorithms and processes.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 5543, Database Systems CS 5623, Fundamentals of Data Science CS 6523, Data Mining Techniques CS 6443, Machine Learning CS 6543, Advanced Database Systems
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 2	The ability to apply data science analysis techniques to problem identification.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 5543, Database Systems CS 5623, Fundamentals of Data Science CS 6523, Data Mining Techniques CS 6443, Machine Learning CS 6543, Advanced Database Systems STAT 6433, Time Series Analysis STAT 6643, Multivariate Analysis STAT 6653, Data Analysis I: Regression Analysis STAT 6663, Data Analysis II: Analysis of Variance
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 3	The ability to apply data science implementation techniques to problem solution.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 5543, Database Systems CS 5623, Fundamentals of Data Science CS 6523, Data Mining Techniques CS 6443, Machine Learning CS 6543, Advanced Database Systems
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Please repeat as necessary.

LETTER OF NOTIFICATION – 3

NEW OPTION, CONCENTRATION, EMPHASIS

(Maximum 18 semester credit hours of new theory courses and 6 credit hours of new practicum courses)

1. Institution submitting request:
   Arkansas State University

2. Contact person/title:
   Dr. Hung-Chi Su, Chair of the Department of Computer Science

3. Phone number/e-mail address:
   870-680-8119, suh@astate.edu

4. Proposed effective date:
   Spring 2018

5. Title of degree program: (Indicate if the degree listed above is approved for distance delivery)
   Master of Science in Computer Science

6. CIP Code:
   11.0101

7. Degree Code:
   6180

8. Proposed name of new option/concentration/emphasis:
   Data Science

9. Reason for proposed action:
   There is a rising demand for students who have expertise in data science from corporations, nonprofit companies, agencies and educational institutions. A data science emphasis will complement the computer science degree program to prepare students with knowledge and skills to analyze and discover information and relationships from large-scale data sets in data-heavy careers.

10. New option/emphasis/concentration objective:
    The emphasis will prepare students to have a set of data science theoretical and practical skills that can be used in a career to conduct research and/or to improve performance, add responsibilities, and earn promotions.

11. Provide the following:
    a. Curriculum outline - List of courses in new option/concentration/emphasis – Underline required courses

CS 5543, Database Systems
CS 5623, Fundamentals of Data Science
CS 6523, Data Mining Techniques
CS 6443, Machine Learning
CS 6543, Adv. Database Systems
STAT 6433, Time Series Analysis
STAT 6643, Multivariate Analysis
STAT 6653, Data Analysis I: Regression Analysis
STAT 6663, Data Analysis II: Analysis of Variance

b. Provide degree plan that includes new option/emphasis/concentration

Course Number	Course Name	Credit Hours
CS 5713	Analysis of Algorithms	3
Choose One of the Following:		
CS 5133	Compilers	3
CS 5723	Automata Theory	
Choose One of the Following:		
CS 5313	Computer Networks	3
CS 6213	Parallel Processing	
CS 6243 (pre fall 2017 #s were 6233 & 6823)	Distributed Systems	
CS 6253 (pre fall 2017 #s were 6223 & 6823)	Heterogeneous Computing (pre fall 2017 name was High Performance Computing)	
Data Science Emphasis:		
CS 5543	Database Systems	3
CS 5623	Fundamentals of Data Science	3
CS 6523	Data Mining Techniques	3
Choose One of the Following:		
CS 6443	Machine Learning	3
CS 6543	Advanced Database Systems	
STAT 6433	Time Series Analysis	
STAT 6643	Multivariate Analysis	
STAT 6653	Data Analysis I: Regression Analysis	
STAT 6663	Data Analysis II: Analysis of Variance	
Electives	Computer Science Electives	6
Electives	Computer Science, Math, or Stats Electives	6
Total		33

c. Total semester credit hours required for option/emphasis/concentration
(Option range: 9–24 semester credit hours)

12

d. New courses and new course descriptions

- CS 5623, Fundamentals of Data Science
  Study of the practices and techniques associated with data science, including programming for data analytics, modern technologies for data access in distributed and parallel systems, and an overview of machine learning models.
- CS 6523, Data Mining Techniques (*offered to date as a special topics subject, CS6823*)
  Exploration of the algorithms and methodologies in knowledge discovery and data mining used to find information or knowledge of interest in large data sets efficiently.
- CS 6443, Machine Learning (*offered to date as a special topics subject, CS6823*)
  The theory and practice of machine learning from a variety of perspectives. Topics include supervised learning (classification, regression); unsupervised learning (clustering, dimensionality reduction); reinforcement learning; and computational learning theory.
- CS 6543, Advanced Database Systems (*offered to date as a special topics subject, CS6823*)
  A study of the internals of database systems as a basis for system implementation and performance tuning. Topics include database system architecture, transactions and serializability, recovery from errors, query optimization, and new technologies in database systems.

- STAT 6433, Time Series Analysis (*offered to date as a seminar subject, MATH 669V*)
  Topics include stochastic processes, stationarity, autocovariance and autocorrelation, filtering and smoothing, ARMA processes, and spectral analysis.

e. Goals and objectives of program option
- Students will possess a strong foundational knowledge of the theory and application of data science algorithms and processes.
- Students will have the ability to identify and analyze data science problems and to implement their solutions.

f. Expected student learning outcomes
Student will have:
- a deeper understanding of the theory and application of data science algorithms and processes.
- the ability to apply data science analysis techniques to problem identification.
- the ability to apply data science implementation techniques to problem solution.

g. Documentation that program option meets employer needs

https://www.forbes.com/sites/emsi/2016/11/16/want-to-become-a-data-scientist-where-the-jobs-are-and-what-employers-are-looking-for/#5b0628ce5760

There were on average 2900 unique job postings active per month for data scientists over the past nine months.

https://www.forbes.com/sites/louiscolumbus/2017/05/13/ibm-predicts-demand-for-data-scientists-will-soar-28-by-2020/#29aa079b7e3b

Annual demand for the fast-growing new roles of data scientist, data developers, and data engineers will reach nearly 700,000 openings by 2020.

http://www.computerscienceonline.org/degree-programs/data-science/

According to research from executive recruiting company Burtch Works, a majority of professional data scientists (92 percent) hold a graduate degree.

h. Student demand (projected enrollment) for program option
40

i. Name of institutions offering similar program or program option and the institution(s) used as a model to develop the proposed program option
University of Georgia
University of Colorado-Boulder
University of Southern California

Model used to develop program was the A-State M.S. in Computer Science program

12. Institutional curriculum committee review/approval date:

13. Will the new option/emphasis/concentration be offered via distance delivery? No
If yes, indicate mode of distance delivery:

14. Explain in detail the distance delivery procedures to be used:
N/A

15. Specify the amount of additional costs required for program implementation, the source of funds, and how funds will be used.

All but one of the courses involved are already being taught as special topics; the rotation will be revised to provide an opening for the one new course. Consequently, there will be no extra funds required.

16. Provide additional program information if requested by ADHE staff.

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic officer: _____ Date:

Name (printed):

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

New Emphasis, Concentration or Option Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand	9/27/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Hung-Chi Su	9/27/2017		ENTER DATE
Department Chair:		**Head of Unitb (If applicable)**	
David F. Gilmore	10/6/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Anne A. Grippo	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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i. Proposed Program Title
Master of Science in Computer Science with Emphasis in High Performance Computing

ii. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

iii. Proposed Starting Date
Spring 2018

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

Insert between page 262 and page 263262 of 2017-18 Graduate Bulletin:

Computer Science
Master of Science
Emphasis in High Performance Computing

University Requirements:
See Graduate School Degree Policies for additional information (p. 35)
Program Requirements:
Minimum of eighteen hours of 6000 level Computer Science and approved Mathematics and/or Statistics coursework inclusive of thesis.

	Sem. Hrs.
Theory:	3
CS 5133, Compiler	
OR	
CS 5723, Automata Theory	
Systems:	3
CS 5313, Computer Networks	
Algorithms:	3
CS 5713, Analysis of Algorithms	

Emphasis Area (High Performance Computing):	
CS 6213, Parallel Processing	3
CS 6243, Distributed Systems	3
CS 6253, Heterogeneous Computing	3
Emphasis Electives (select one of the following):	3
CS 5223, Unix Systems Programming	
CS 6223, Advanced Computer Architecture	
CS 6233, Operating System Design	
CS 6263, Cloud Computing	
CS Electives	6
CS, MATH, and/or STAT Electives,	6
Subject to the prior approval of the Computer Science Curriculum Committee.	
Sub-total	33
Total Required Hours:	33

EMPHASIS ASSESSMENT

University Goals

1. Please indicate the university-level student learning outcomes for which this new emphasis will contribute. Check all that apply.

a. [ ] Global Awareness | b. [X] Thinking Critically | c. [X] Information Literacy

Emphasis Goals

2. Justification for the introduction of the new emphasis. Must include:

a. Academic rationale (how will this emphasis fit into the mission established by the department for the curriculum?) The emphasis addresses the department's ongoing need to constantly revise the curriculum to reflect new concepts and technologies in computer science. The rapid growth in the high performance computing area in recent years is bringing great attention and challenges to computer science academia, industry and government, placing high demands on professionals in this field.

b. List emphasis goals (faculty or curricular goals, specific to the emphasis.)
- Students will possess a strong foundational knowledge of the theory and application of high performance computing algorithms and processes.
- Students will have the ability to identify and analyze high performance computing problems and to implement solutions for them.

d. Student population served.

Graduate students

Emphasis Student Learning Outcomes

3. Please fill out the following table to develop a continuous improvement assessment process for this emphasis.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Note: Best practices suggest an emphasis would have 1 to 3 outcomes.

Outcome 1	A deeper understanding of the theory and application of high performance computing algorithms and processes.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 5223, Unix Systems Programming CS 5313, Computer Networks CS 6213, Parallel Processing CS 6223, Advanced Computer Architecture CS 6233, Operating System Design CS 6243, Distributed Systems CS 6253, Heterogeneous Computing CS 6263, Cloud Computing
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.

Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 2	The ability to apply high performance analysis techniques to problem identification.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6213, Parallel Processing CS 6223, Advanced Computer Architecture CS 6233, Operating System Design CS 6243, Distributed Systems CS 6253, Heterogeneous Computing CS 6263, Cloud Computing
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 3	The ability to apply high performance computing implementation techniques to problem solution.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6213, Parallel Processing CS 6223, Advanced Computer Architecture CS 6233, Operating System Design CS 6243, Distributed Systems CS 6253, Heterogeneous Computing CS 6263, Cloud Computing
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Please repeat as necessary.

LETTER OF NOTIFICATION – 3

NEW OPTION, CONCENTRATION, EMPHASIS

(Maximum 18 semester credit hours of new theory courses and 6 credit hours of new practicum courses)

1. Institution submitting request:
   Arkansas State University

2. Contact person/title:
   Dr. Hung-Chi Su, Chair of the Department of Computer Science

3. Phone number/e-mail address:
   870-680-8119, suh@astate.edu

4. Proposed effective date:
   Spring 2018

5. Title of degree program: (Indicate if the degree listed above is approved for distance delivery)
   Master of Science in Computer Science

6. CIP Code:
   11.0101

7. Degree Code:
   6180

8. Proposed name of new option/concentration/emphasis:
   High Performance Computing

9. Reason for proposed action:
   There is a rising demand for students who have expertise in High Performance Computing from corporations, nonprofit companies, and agencies. A high performance computing emphasis will complement the computer science degree program to prepare students with knowledge and skills to run parallel processing for running advanced application programs efficiently.

10. New option/emphasis/concentration objective:
    This emphasis will prepare students to have a set of high performance computing skills that can be used in a career to conduct research and/or to improve performance, add responsibilities, and earn promotions.

11. Provide the following:
    a. Curriculum outline - List of courses in new option/concentration/emphasis – Underline required courses

CS 6213, Parallel Processing
CS 6243, Heterogeneous Computing
CS 6253, Distributed Systems
CS 5223, Unix Systems Programming
CS 6223, Advanced Computer Architecture
CS 6233, Operating System Design
CS 6263, Cloud Computing

b. Provide degree plan that includes new option/emphasis/concentration

Course Number	Course Name	Credit Hours
CS 5713	Analysis of Algorithms	3
CS 5313	Computer Networks	3
Choose One of the Following:		
CS 5133	Compiler	3
CS 5723	Automata Theory	
High Performance Computing Emphasis:		
CS 6213	Parallel Processing	3
CS 6243 (pre fall 2017 #s were 6233 & 6823)	Distributed Systems	3
CS 6253 (pre fall 2017 #s were 6223 & 6823)	Heterogeneous Computing (pre fall 2017 name was High Performance Computing)	3
Choose One of the Following:		
CS 5223	Unix Systems Programming	3
CS 6223	Advanced Computer Architecture	
CS 6233	Operating System Design	
CS 6263	Cloud Computing	
Electives	Computer Science Electives	6
Electives	Computer Science, Math, or Stats Electives	6
Total		33

c. Total semester credit hours required for option/emphasis/concentration
(Option range: 9–24 semester credit hours)

12

d. New courses and new course descriptions

- CS 6243, Distributed Systems (*offered to date as a special topics subject, CS6823*)
  Advanced topics on distributed computing systems including computing models, cluster computing, grid computing, service computing, virtual machines, computing in the cloud, peer-to-peer computing and major distributed algorithms.
- CS 6253, Heterogeneous Computing (*offered to date as a special topics subject, CS6823*)
  The study of the ecosystem of co-processing elements such as the Graphics Processing Unit or GPU in modern computing systems, covering hardware architecture, software design, the programming paradigm, and related libraries.
- CS 6223, Advanced Computer Architecture (*offered to date as a special topics subject, CS6823*)
  Advanced topics on computer architecture, including: memory hierarchy design; instruction-level parallelism in pipelines; data-level parallelism in vector, SIMD and GPU architectures; thread-level parallelism; warehouse-scale computers.
- CS 6233, Operating System Design (*offered to date as a special topics subject, CS6823*)
  Advanced topics on the design and implementation of major operating systems, including memory management, kernel data structures, process management, file systems, devices and modules.
- CS 6263, Cloud Computing
  Major aspects of the cloud ecosystem including conceptual basis, design, virtualization, architecture, storage, programming paradigms, and software development.

e. Goals and objectives of program option

- Students will possess a strong foundational knowledge of the theory and application of high performance computing algorithms and processes.
- Students will have the ability to identify and analyze high performance computing problems and to implement their solutions.

f. Expected student learning outcomes

Student will have:

- a deeper understanding of the theory and application of high performance computing algorithms and processes.
- the ability to apply high performance computing analysis techniques to problem identification.
- the ability to apply high performance computing implementation techniques to problem solution.

g. Documentation that program option meets employer needs

http://forecasting.tstc.edu/techbriefs/high-performance-computing/

Technology has shifted from supercomputers to clusters and grids of commercial off-the-self microcomputers, and thus moving HPC into the mainstream marketplace through business, education, government, and the military. This shift has, in turn, created a demand form HPC technicians, who are in short supply.

Students graduating with HPC skills will have job opportunities across education, military, government, and industry sectors.

http://www.sciencemag.org/careers/2012/03/data-deluge-drives-demand

As researchers produce more and more data to crunch, national labs and university-affiliated supercomputer centers are expanding and building new supercomputers, which need more and more computer scientists with high-performance computing skills to program and operate them.

"We are certainly having trouble finding people with the appropriate skills," says William Gropp, a professor of computer science at the University of Illinois, Urbana-Champaign, which is installing a new supercomputer called Blue Waters. "Everyone that I've spoken to has said that hiring is a problem."

h. Student demand (projected enrollment) for program option
40

i. Name of institutions offering similar program or program option and the institution(s) used as a model to develop the proposed program option
University of Southern California
Georgia Tech University

Model used to develop program was the A-State M.S. in Computer Science program

12. Institutional curriculum committee review/approval date:

13. Will the new option/emphasis/concentration be offered via distance delivery? No
If yes, indicate mode of distance delivery:

14. Explain in detail the distance delivery procedures to be used:
N/A

15. Specify the amount of additional costs required for program implementation, the source of funds, and how funds will be used.

All but one of the courses involved are already being taught as special topics; the rotation will be revised to provide an opening for the one new course. Consequently, there will be no extra funds required.

16. Provide additional program information if requested by ADHE staff.

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic officer: _____ Date:

Name (printed):

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

Reconfiguration of Existing Degree Program Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand	9/27/2017	Rob Williams	10/25/2017
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Hung-Chi Su	9/27/2017	Mary Jane Bradley	10/25/2017
Department Chair:		**Head of Unit (If applicable)**	
David F. Gilmore	10/6/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Anne A. Grippo	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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i. Proposed Program Title
Graduate Certificate in Computer Science Education

ii. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

iii. Proposed Starting Date
8/15/2018

iv. Is there differential tuition requested? *If yes, please fill out the New Program/Tuition and Fees Change Form.*
No

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

****For new programs, please insert copy of all sections where this is referenced.****

Insert on page 52 of 2017-18 Graduate Bulletin under Graduate Certificates:

Educational Leadership —Building Level Administration —Curriculum Director —Gifted, Talented and Creative Director —Instructional Specialist - Gifted, Talented and Creative —K-12 Special Education —Special Education Director
Dyslexia Therapy
History
Health Care Management
Health Communication
Healthcare Emergency Management
Health Sciences Education
Clinical Mental Health Counseling
Nurse Educator
Play Therapy
Computer Science Education

Insert on page 244 of 2017-18 Graduate Bulletin:

The College of Sciences and Mathematics offers work leading to the Master of Arts degree in biology; to the Master of Science degree with majors in biology, chemistry, computer science, environmental sciences, and mathematics; to the Master of Science in molecular biosciences; to the Master of Science in Education degree with majors in biology, chemistry, and mathematics; and to the Graduate Certificate in Computer Science Education.

Insert on page 262 of 2017-2018 Graduate Bulletin after Program of Study for Computer Science:

Computer Science Education

Graduate Certificate

University Requirements:	
See Graduate Degree Policies for additional information (p. 35)	
Requirements:	**Sem. Hrs.**
ELFN 6763, Philosophies of Education OR PSY 6513, Advanced Educational Psychology	3
CSED 5043 Principles of Computer Programming	3
CSED 5731 Principles of Abstract Structures	1
CSED 5231 Principles of Operating Systems	1
CSED 5241 Principles of Computer Organization	1
Electives:	**Sem. Hrs.**
Select six hours from the following: CS 5223 UNIX Systems Programming CS 5313 Computer Networks CS 5543 Database Systems	6
Total Required Hours:	15

LETTER OF NOTIFICATION – 11

RECONFIGURATION OF EXISTING DEGREE PROGRAMS

(Consolidation or Separation of Degrees to Create New Degree)

*Please include the documents to be submitted found throughout this LON at the end of the form.

1. Institution submitting request: *Arkansas State University*

2. Contact person/title: *Dr. Hung-Chi Su, Chair of Computer Science Department*

3. Title(s) of degree programs to be consolidated/reconfigured:
   Master of Science in Computer Science

4. Current CIP Code(s)/Current Degree Code(s): *11.0101*

5. Proposed title of consolidated/reconfigured program:
   Graduate Certificate in Computer Science Education

6. Proposed CIP Code for new program: *13.1321*

7. Proposed Effective Date: *August 15, 2018*

8. Reason for proposed program consolidation/reconfiguration:
   (Indicate student demand (projected enrollment) for the proposed program and document that the program meets employer needs)

   The program has been designed to accommodate an anticipated initial enrollment at launch of five to ten students with a slow increase after that. This is in part due to the logistical demands of pursuing the degree placed on in-service teachers, who make up the potential student body. As the program develops, methods of offering at least some of the course work online are being considered to grow the program further.

   Documenting that the program meets employer needs:

   "Arkansas Governor Hutchinson has overseen passage of the first truly comprehensive law requiring all public and charter high schools to offer computer sciences courses to students, beating better known tech centers like California and New York to the punch."

   https://www.wired.com/2015/03/arkansas-computer-science/

   "Arkansas, for example, is scrambling to hire and train enough qualified teachers. As Arkansas Governor Asa Hutchinson stated at the time the new mandate became law, only 20 high school teachers across the entire state were actually prepared to teach computer science."

   http://fortune.com/2015/10/22/u-s-students-computer-science/

The Arkansas Department of Education designated the following as critical academic shortage areas for the 2016-2017 school year: Computer Science.

http://www.arkansased.gov/public/userfiles/HR_and_Educator_Effectiveness/HR_Educator_Licensure/CSA_PPT_from_Dec_2015_FINAL_with_Notes-11266.pdf

"Successful implementation of computer science standards may hinge on one thing: teacher capacity. Without enough qualified teachers and the resources to support them, states will be hard pressed to make computer science a part of every student's education—something that industry leaders say is critical to career readiness."

http://www.nasbe.org/state-innovation/preparing-computer-science-teachers-in-maryland-and-arkansas/

U.S. Department of Education Teacher Shortage Areas Nationwide Listing 2016-2017 Arkansas: Computer Science

https://www2.ed.gov/about/offices/list/ope/pol/tsa.pdf

9. Provide current and proposed curriculum outline by semester.

For undergraduate programs, please also fill out 8-semester plan at end of document.

Indicate total semester credit hours required for the proposed program. Underline new courses and provide new course descriptions. (If existing courses have been modified to create new courses, provide the course name/description for the current/existing courses and indicate the related new/modified courses.) Identify required general education core courses with an asterisk.

Current M.S. in Computer Science Curriculum		Credit Hours
Algorithms:		3
CS 5713	Algorithms	
Theory (select one of the following):		3
CS 5133	Compilers	
CS 5723	Automata Theory	
Systems (select one of the following):		3
CS 5313	Computer Networks	
CS 6213	Parallel Processing	
CS 6223	High Performance Computing	
CS 6233	Distributed Systems	
Computer Science Electives (Choose 18 hours)		
	including CS courses such as: CS 5223 UNIX Systems Programming CS 5313 Computer Networks CS 5543 Database Systems	18
Computer Science, Mathematics, and/or Statistics Electives		6
Total Credit Hours		33

Proposed Graduate Certificate in Computer Science Education Curriculum		Credit Hours
CSED 5043	Principles of Computer Programming	3
CSED 5731	Principles of Abstract Structures	1
CSED 5231	Principles of Operating Systems	1
CSED 5241	Principles of Computer Organization	1
Select Two of the Following:		6
CS 5223	UNIX Systems Programming	
CS 5313	Computer Networks	
CS 5543	Database Systems	
Select One of the Following:		3
ELFN 6763	Philosophies of Education	
PSY 6513	Advanced Educational Psychology	
Total Credit Hours		15

Propose Certificate in Computer Science Education Schedule		Credit Hours
Fall Semester		3
CSED 5043	Principles of Computer Programming	
Spring Semester		3
CSED 5731	Principles of Abstract Structures	
CSED 5231	Principles of Operating Systems	
CSED 5241	Principles of Computer Organization	
Summer Semester		3
ELFN 6763 or PSY 6513	Philosophies of Education Advanced Educational Psychology	
Fall Semester		3
CS elective (one of three)		
Spring Semester		3
CS elective (one of three)		
Total Credit Hours		15

New courses:

- CSED 5043. Principles of Computer Programming (*originated as subject in CS5012 & CS5022 & CS5032 accelerated programming and data structures courses*)
  Programming methodology, procedural abstraction, top-down design, object-oriented programming techniques, fundamental data structures such as linked lists, stacks, queues and binary trees, searching and sorting techniques, and an introduction to algorithm analysis, all with an emphasis on pedagogy in the secondary school.

- CSED 5731, Principles of Abstract Structures (*originated as subject in undergraduate special course CS482V*)
  Foundational computer science concepts, including algorithm complexity and structures such as sets, trees, and graphs, with an emphasis on pedagogy in the secondary school.

- CSED 5231, Principles of Operating Systems (*originated as subject in undergraduate special course CS482V*)
  Policies, design issues, and implementation techniques for operating system software with an emphasis on pedagogy in the secondary school.

- CSED 5241, Principles of Computer Organization
  Basic principles of computer architectural design with an emphasis on pedagogy in the secondary school.

10. Provide program budget. Indicate amount of funds available for reallocation.
    See end of document.

11. Provide current and proposed organizational chart. *See end of document.*

12. Institutional curriculum committee review/approval date: Enter text...

13. Are the existing degrees offered off-campus or via distance delivery?

    No

14. Will the proposed degree be offered on-campus, off-campus, or via distance delivery?

    On-campus

15. Identify mode of distance delivery or the off-campus location for the proposed program.

    N/A

16. Provide documentation that proposed program has received full approval by licensure/certification entity, if required.
    (A program offered for teacher/education administrator licensure must be reviewed/approved by the Arkansas Department of Education prior to consideration by the Coordinating Board; therefore, the Education Protocol Form also must be submitted to ADHE along with the Letter of Notification).

    N/A, program does not lead to licensure/certification

17. Provide copy of e-mail notification to other institutions in the area of the proposed program and their responses; include your reply to the institutional responses. *See end of document.*

18. List institutions offering similar program and identify the institutions used as a model to develop the proposed program.

    The College of St. Scholastica

    Model used to develop program was the A-State M.S. in Computer Science program

19. Provide scheduled program review date (within 10 years of program implementation).

    Spring 2028

20. Provide additional program information if requested by ADHE staff.
    Enter text...

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic officer: _____ Date:

Name (printed):

8-Semester Plan

(referenced in #9 - Undergraduate Proposals Only)

Instructions: Please identify new courses in italics.

Arkansas State University-
Jonesboro Degree:
Major:
Year:

Students requiring developmental course work based on low entrance exam scores (ACT, SAT, ASSET, COMPASS) may not be able to complete this program of study in eight (8) semesters. Developmental courses do not count toward total degree hours. **Students having completed college level courses prior to enrollment will be assisted by their advisor in making appropriate substitutions. In most cases, general education courses may be interchanged between semesters.** A minimum of 45 hours of upper division credit (3000-4000 level) is required for this degree.

Year 1					Year 1			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 2					Year 2			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 3					Year 3			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 4					Year 4			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			

Total Jr/Sr Hours ___ **Total Degree Hours** ___

Graduation Requirements:

Program Budget
(referenced in # 10)

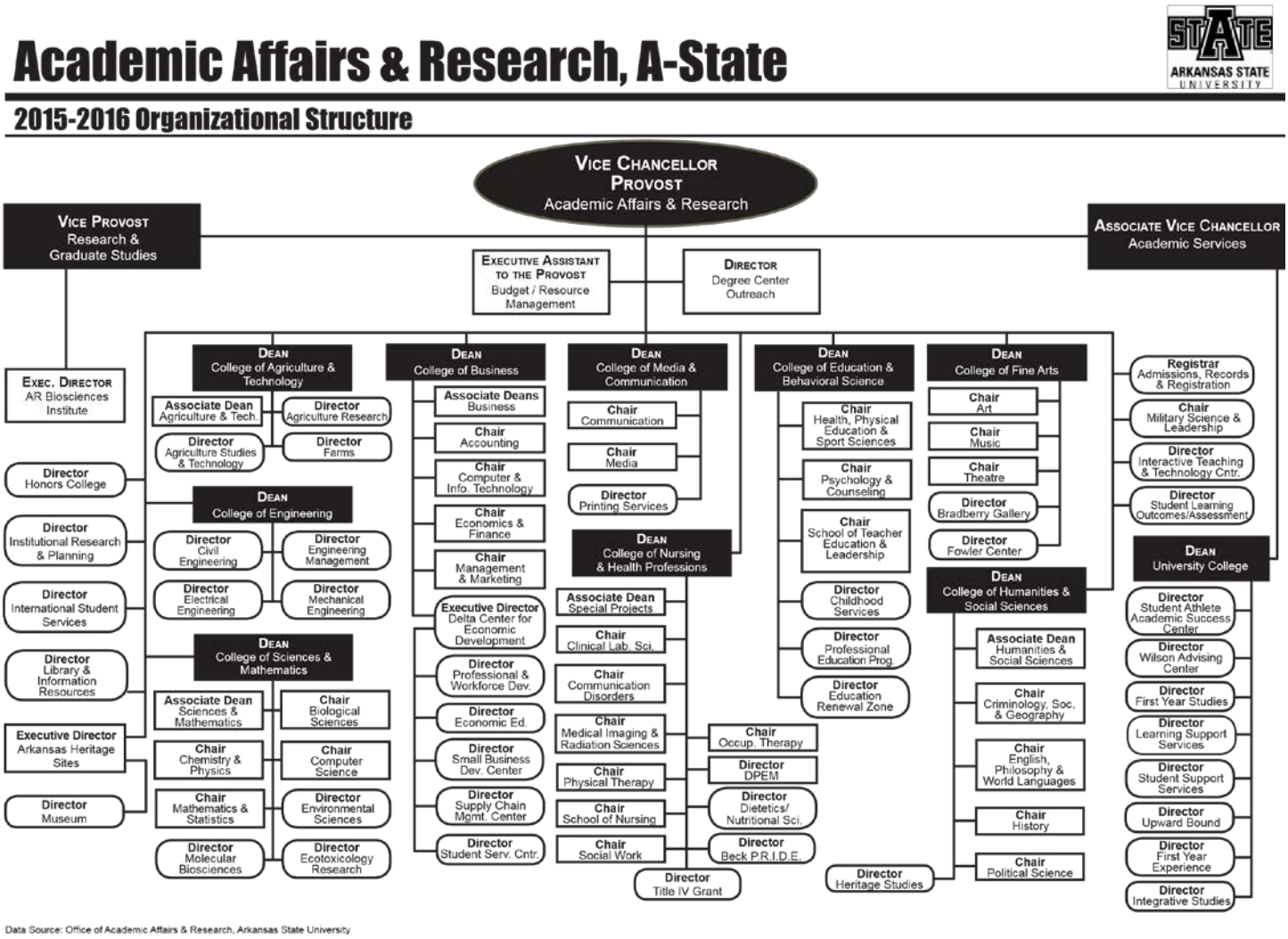
Provide program budget. Indicate amount of funds available for reallocation.

Courses required will consist of existing education courses utilized by other education degrees, existing computer science (CS) courses, and some new computer science education (CSED) courses. While enrollment in the program is small, all of these new CSED courses save one hour (CSED 5241: Principles of Computer Organization) may be taught largely in conjunction with graduate CS courses already in the course rotation. This coupled with a slight adjustment to the regular course rotation will result in no new resources or faculty being required.

Organizational Chart
(referenced in # 11)

Provide current and proposed organizational chart. Include where the proposed program will be housed (department/college).

Organizational Chart will remain the same.



The proposed program will be housed in the Department of Computer Science in the College of Sciences and Mathematics.

Written Notification to Other Institutions
(referenced in # 17)

This should include a copy of written notification to other institutions in area of proposed program and responses

Student Learning Outcomes

Provide outcomes that students will accomplish during or at completion of this reconfigured degree. Fill out the following table to develop a continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Note: Best practices suggest 4-7 outcomes per program; minors would have 1 to 4 outcomes.

Outcome 1	Students will have a broad exposure to concepts in computer science.
Assessment Measure	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CSED 5043, Principles of Computer Programming CSED 5731, Principles of Abstract Structures CSED 5231, Principles of Operating Systems CSED 5241, Principles of Computer Organization CS 5223, UNIX Systems Programming CS 5313, Computer Networks CS 5543, Database Systems
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Outcome 2	Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
Assessment Measure	Comprehensive examinations, student exit interview, and employer surveys
Which courses are responsible for this outcome?	CSED 5043, Principles of Computer Programming CSED 5731, Principles of Abstract Structures CSED 5231, Principles of Operating Systems CSED 5241, Principles of Computer Organization CS 5223, UNIX Systems Programming CS 5313, Computer Networks CS 5543, Database Systems
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Outcome 3	Students will be able to communicate computer science concepts with clarity and effective exposition.
Assessment Measure	Comprehensive examinations, student exit interview and employer surveys
Which courses are responsible for this outcome?	CSED 5043, Principles of Computer Programming CSED 5731, Principles of Abstract Structures CSED 5231, Principles of Operating Systems CSED 5241, Principles of Computer Organization
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Outcome 4	Students will understand how educational philosophies impact teaching and student learning.
Assessment Measure	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	ELFN 6763, Philosophies of Education PSY 6513, Advanced Educational Psychology
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Outcome 5	Students will understand the basic principles of learning and their applications to classroom management and instructional design.
Assessment Measure	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	ELFN 6763, Philosophies of Education PSY 6513, Advanced Educational Psychology
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Please repeat as necessary.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

Reconfiguration of Existing Degree Program Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand	9/27/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Hung-Chi Su	9/27/2017		ENTER DATE
Department Chair:		**Head of Unit (If applicable)**	
David F. Gilmore	10/6/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Anne A. Grippo	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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i. Proposed Program Title
Graduate Certificate in Cyber Security

ii. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

iii. Proposed Starting Date
Spring 2018

iv. Is there differential tuition requested? *If yes, please fill out the New Program/Tuition and Fees Change Form.*
No

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

****For new programs, please insert copy of all sections where this is referenced.****

Insert Page 52 of 2017-18 Graduate Bulletin:

GRADUATE CERTIFICATES

Addiction Studies
Aging Studies
Educational Leadership —Building Level Administration —Curriculum Director —Gifted, Talented and Creative Director —Instructional Specialist - Gifted, Talented and Creative —K-12 Special Education —Special Education Director
Dyslexia Therapy
History
Health Care Management
Health Communication
Healthcare Emergency Management
Health Sciences Education
Clinical Mental Health Counseling
Nurse Educator
Play Therapy
Cyber Security

Insert Page 244 of 2017-18 Graduate Bulletin:

PROGRAMS OF STUDY

The College of Sciences and Mathematics offers work leading to the Master of Arts degree in biology; to the Master of Science degree with majors in biology, chemistry, computer science, environmental sciences, and mathematics; to the Master of Science in molecular biosciences; to the Master of Science in Education degree with majors in biology, chemistry, and mathematics; and to the Graduate Certificate in Cyber Security.

Insert Page 262 of 2017-18 Graduate Bulletin after Program of Study for Computer Science (but before Program of Study for the Master of Science in Environmental Sciences Degree on page 263):

Cyber Security
Graduate Certificate

University Requirements:
See Graduate School Degree Policies for additional information (p. 35)

Core Requirements:	Sem. Hrs.
CS 6313, Data Security	3
CS 6323, Computer Security	3
CS 6333, Network and Internet Security	3
Electives:	6
Select six hours from the following:	
CS 6123, Software Security	
CS 6343, Cloud Security	
LAW 6033, Cyberlaw and E-Commerce	
Total Required Hours:	15

LETTER OF NOTIFICATION – 11

RECONFIGURATION OF EXISTING DEGREE PROGRAMS

(Consolidation or Separation of Degrees to Create New Degree)

*Please include the documents to be submitted found throughout this LON at the end of the form.

1. Institution submitting request: *Arkansas State University*

2. Contact person/title: *Dr. Hung-Chi Su, Chair of Computer Science Department*

3. Title(s) of degree programs to be consolidated/reconfigured:
   Master of Science in Computer Science

4. Current CIP Code(s)/Current Degree Code(s): *11.0101*

5. Proposed title of consolidated/reconfigured program: Graduate Certificate in Cyber Security
6. Proposed CIP Code for new program: *11.0101*
7. Proposed Effective Date: *Spring 2018*

8. Reason for proposed program consolidation/reconfiguration:
   (Indicate student demand (projected enrollment) for the proposed program and document that the program meets employer needs)

Reconfiguring the M.S. in Computer Science degree to create a graduate certificate in Cyber Security for students in the computer science program as well as non-degree seeking students. The courses will be pulled from the MS Computer Science Elective courses.

There is a rising demand for students who have expertise in Cybersecurity from corporations, nonprofit companies, and agencies. A digitally literate workforce using technology in a secure manner is imperative to these companies as well as the economy as a whole, and it provides security to an already critical infrastructure.

The projected enrollment will be 35 students per section.

According to NetworkWorld, there is a high demand for cybersecurity skill sets, however there is a shortage of individuals with these skills. "According to ESG (Enterprise Strategy Group) research, 46 percent of organizations say they have a 'problematic shortage' of cybersecurity skills in 2016."

http://www.networkworld.com/article/3068177/security/high-demand-cybersecurity-skill-sets.html

According to the Colorado Springs Gazette there is a record 79 percent of American businesses who have reported a cybersecurity incident in 2014. Also, the 238,158 job postings for cyber security positions represented a 91% increase from 2010.

http://gazette.com/cybersecurity/education

According to the Bureau of Labor Statistics, the typical education required for an Information Security Analyst

position is a Bachelor's degree with a job outlook of 18% increase from 2014-2024.

http://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm

9. Provide current and proposed curriculum outline by semester.

For undergraduate programs, please also fill out 8-semester plan at end of document.

Indicate total semester credit hours required for the proposed program. Underline new courses and provide new course descriptions. (If existing courses have been modified to create new courses, provide the course name/description for the current/existing courses and indicate the related new/modified courses.) Identify required general education core courses with an asterisk.

Current M.S. in Computer Science Curriculum

M.S. Computer Science		
Course Number	Course Title	Credit Hours
CS 5713	Analysis of Algorithms	3
Select One of the Following		
CS 5133	Compiler	3
CS 5723	Automata Theory	
Select One of the Following		
CS 5313	Computer Networks	3
CS 6213	Parallel Processing	
CS 6243 (pre fall 2017 #s were 6233 & 6823)	Distributed Systems	
CS 6253 (pre fall 2017 #s were 6223 & 6823)	Heterogeneous Computing (pre fall 2017 name was High Performance Computing)	
Computer Science Electives (Choose 18 hours)		
	including CS courses such as: CS 6313 Data Security CS 6323 Computer Security CS 6333 Network and Internet Security CS 6123 Software Security CS 6343 Cloud Security	18
CS/MATH/STAT Electives (Choose 6 hours)		
CS/MATH/STAT Elective		6
CS/MATH/STAT Elective		

Proposed Graduate Certificate in Cyber Security

Course Number	Course Title	Credit Hours
Semester 1		
CS 6313	Data Security	3
Semester 2		
CS 6323	Computer Security	3
Semester 3		
CS 6333	Network and Internet Security	3
Semester 4		
Choose Two Electives (6 hours)		
CS 6123	Software Security	6
CS 6343	Cloud Security	
LAW 6033	Cyberlaw and E-Commerce	
Total Credit Hours		15

New/modified courses and course descriptions

- CS 6123, Software Security (*originated as subject in previous undergraduate special course CS482V*)
  Study of security issues in the software development process, including security management, secure software development lifecycle, language security, and web application security.
- CS 6323, Computer Security (*offered previously as part of a special topics subject, CS6823*)
  Survey of the latest security issues in computer systems, including topics such as authentication, access control, database security, operating system security, security management, and trust and privacy in computing.
- CS 6333, Network and Internet Security (*offered previously as part of a special topics subject, CS6823*)
  Survey of network authentication, network access control, key management in networked systems, network security protocols, network security software and packages, and network security auditing.
- CS 6343, Cloud Security (*offered previously as a special topics subject, CS6823*)
  Survey of the major security aspects of cloud computing and the corresponding mechanisms, including cloud security management, architecture and measurement as well as virtual machine security and real world cloud security examples.

10. Provide program budget. Indicate amount of funds available for reallocation.
See end of document.

11. Provide current and proposed organizational chart. *See end of document.*

12. Institutional curriculum committee review/approval date: Enter text...

13. Are the existing degrees offered off-campus or via distance delivery? No

14. Will the proposed degree be offered on-campus, off-campus, or via distance delivery?
    On-campus

15. Identify mode of distance delivery or the off-campus location for the proposed program.
    N/A

16. Provide documentation that proposed program has received full approval by licensure/certification entity, if required.
    (A program offered for teacher/education administrator licensure must be reviewed/approved by the Arkansas Department of Education prior to consideration by the Coordinating Board; therefore, the Education Protocol Form also must be submitted to ADHE along with the Letter of Notification).

    N/A, program does not lead to licensure/certification

17. Provide copy of e-mail notification to other institutions in the area of the proposed program and their responses; include your reply to the institutional responses. *See end of document.*

18. List institutions offering similar program and identify the institutions used as a model to develop the proposed program.

    Missouri State University – Cybersecurity Graduate Certificate
    University of Memphis – Graduate Certificate in Cyber Security and Information Assurance
    University of Missouri at St. Louis – Graduate Certificate in Cybersecurity

    Model used to develop program was the A-State M.S. in Computer Science program

19. Provide scheduled program review date (within 10 years of program implementation).
    Spring 2028

20. Provide additional program information if requested by ADHE staff.
    Enter text...

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic officer: _____ Date:

Name (printed):

8-Semester Plan

(referenced in #9 - Undergraduate Proposals Only)

Instructions: Please identify new courses in italics.

Arkansas State University-
Jonesboro Degree:
Major:
Year:

Students requiring developmental course work based on low entrance exam scores (ACT, SAT, ASSET, COMPASS) may not be able to complete this program of study in eight (8) semesters. Developmental courses do not count toward total degree hours. **Students having completed college level courses prior to enrollment will be assisted by their advisor in making appropriate substitutions. In most cases, general education courses may be interchanged between semesters.** A minimum of 45 hours of upper division credit (3000-4000 level) is required for this degree.

Year 1					Year 1			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 2					Year 2			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 3					Year 3			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 4					Year 4			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			

Total Jr/Sr Hours ___ **Total Degree Hours** ___

Graduation Requirements:

Program Budget
(referenced in # 10)

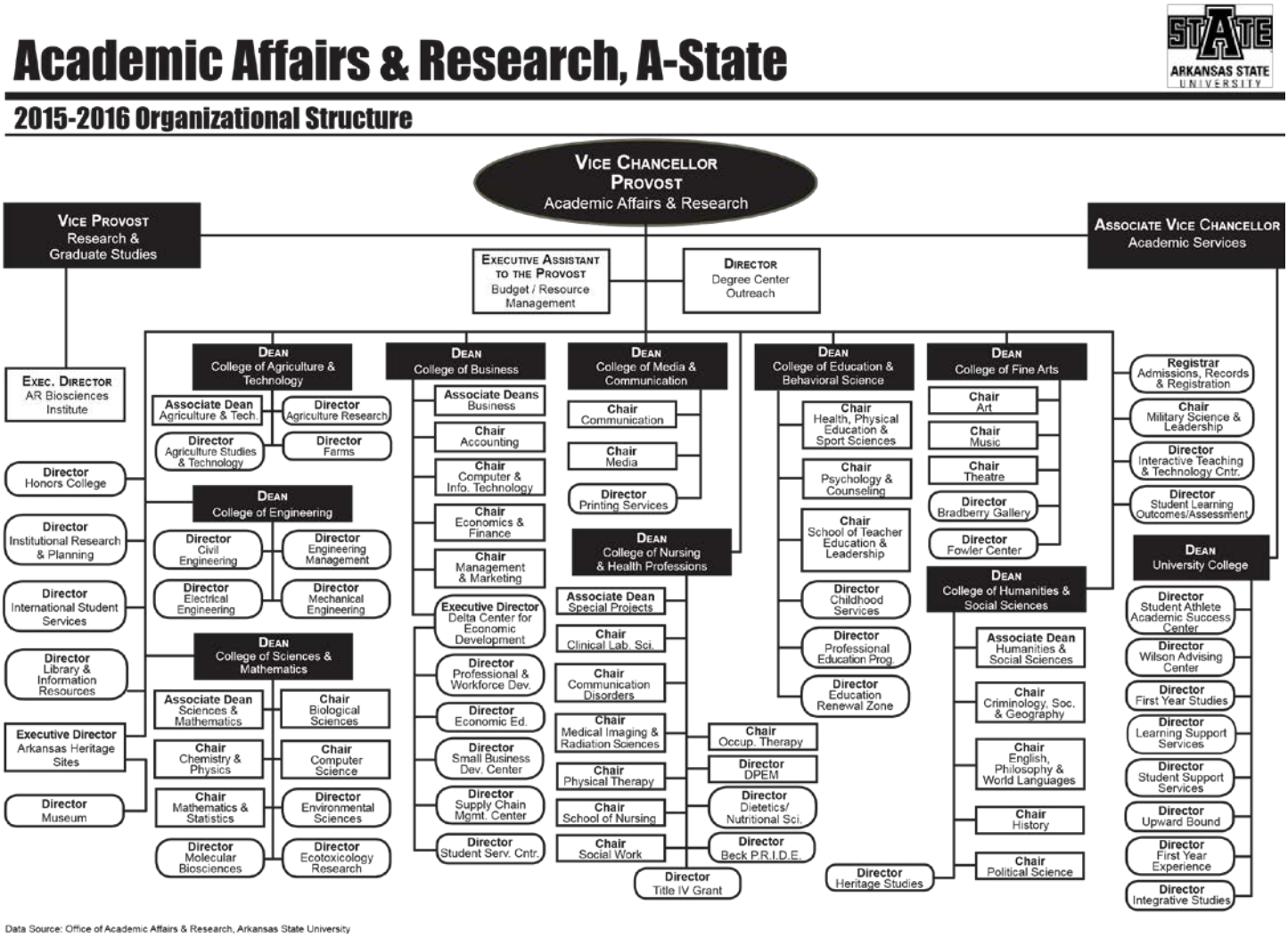
Provide program budget. Indicate amount of funds available for reallocation.

All of the topics in the new courses involved have already been used in the course rotation as special topics; eliminating them as special topics while adding them to the bulletin as regular courses and adjusting the rotation accordingly results in no extra funds being required.

Organizational Chart
(referenced in # 11)

Provide current and proposed organizational chart. Include where the proposed program will be housed (department/college).

Organizational Chart will remain the same.



Written Notification to Other Institutions
(referenced in # 17)

This should include a copy of written notification to other institutions in area of proposed program and responses

According to the office of Vice Chancellor for Academic Affairs, this is not required for this certificate

Student Learning Outcomes

Provide outcomes that students will accomplish during or at completion of this reconfigured degree. Fill out the following table to develop a continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Note: Best practices suggest 4-7 outcomes per program; minors would have 1 to 4 outcomes.

Outcome 1	A deeper understanding of the theory and application of cyber security algorithms and processes.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6123, Software Security CS 6313, Data Security CS 6323, Computer Security CS 6333, Network and Internet Security CS 6343, Cloud Security
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 2	The ability to apply cyber security analysis techniques to problem identification.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6123, Software Security CS 6313, Data Security CS 6323, Computer Security CS 6333, Network and Internet Security CS 6343, Cloud Security LAW 6033, Cyberlaw and E-Commerce
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 3	The ability to apply cyber security implementation techniques to problem solution.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6123, Software Security CS 6313, Data Security CS 6323, Computer Security CS 6333, Network and Internet Security CS 6343, Cloud Security
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Please repeat as necessary.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

Reconfiguration of Existing Degree Program Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand	9/27/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Hung-Chi Su	9/27/2017		ENTER DATE
Department Chair:		**Head of Unit (If applicable)**	
David F. Gilmore	10/6/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Anne A. Grippo	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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i. Proposed Program Title
Graduate Certificate in Data Science

ii. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

iii. Proposed Starting Date
Spring 2018

iv. Is there differential tuition requested? *If yes, please fill out the New Program/Tuition and Fees Change Form.*
No

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

****For new programs, please insert copy of all sections where this is referenced.****

Insert Page 52 of 2017-18 Graduate Bulletin under Graduate Certificates:

Educational Leadership —Building Level Administration —Curriculum Director —Gifted, Talented and Creative Director —Instructional Specialist - Gifted, Talented and Creative —K-12 Special Education —Special Education Director
Dyslexia Therapy
History
Health Care Management
Health Communication
Healthcare Emergency Management
Health Sciences Education
Clinical Mental Health Counseling
Nurse Educator
Play Therapy
Data Science

Insert Page 244 of 2017-18 Graduate Bulletin:

The College of Sciences and Mathematics offers work leading to the Master of Arts degree in biology; to the Master of Science degree with majors in biology, chemistry, computer science, environmental sciences, and mathematics; to the Master of Science in molecular biosciences; to the Master of Science in Education degree with majors in biology, chemistry, and mathematics; and to the Graduate Certificate in Data Science.

Insert Page 262 of 2017-2018 Graduate Bulletin after Program of Study for Computer Science but before Program of Study for Mathematics:

University Requirements:
See Graduate School Degree Policies for additional information (p. 35)

Program Requirements:	Sem. Hrs.
CS 5543, Database Systems	3
CS 5623, Fundamentals of Data Science	3
CS 6523, Data Mining Techniques	3
Electives:	6
Select six hours from the following:	
CS 6443, Machine Learning	
CS 6543, Advanced Database Systems	
STAT 6433, Time Series Analysis	
STAT 6643, Multivariate Analysis	
STAT 6653, Data Analysis I: Regression Analysis	
STAT 6663, Data Analysis II: Analysis of Variance (ANOVA)	
Total Required Hours:	15

LETTER OF NOTIFICATION – 11

RECONFIGURATION OF EXISTING DEGREE PROGRAMS

(Consolidation or Separation of Degrees to Create New Degree)

*Please include the documents to be submitted found throughout this LON at the end of the form.

1. Institution submitting request: *Arkansas State University*

2. Contact person/title: *Dr. Hung-Chi Su, Chair of Computer Science Department*

3. Title(s) of degree programs to be consolidated/reconfigured:
   Master of Science in Computer Science

4. Current CIP Code(s)/Current Degree Code(s): *11.0101*

5. Proposed title of consolidated/reconfigured program: *Graduate Certificate in Data Science*

6. Proposed CIP Code for new program: *11.0301*

7. Proposed Effective Date: *Spring 2018*

8. Reason for proposed program consolidation/reconfiguration:
   (Indicate student demand (projected enrollment) for the proposed program and document that the program meets employer needs)

   Reconfiguring the M.S. in Computer Science degree to create a graduate certificate in Data Science for students in the computer science program as well as non-degree seeking students. The courses will be pulled from the MS Computer Science Elective courses.

   There is a rising demand for students who have expertise in data science from corporations, nonprofit companies, agencies and educational institutions. The projected enrollment will be 35 students per section.

   https://www.forbes.com/sites/emsi/2016/11/16/want-to-become-a-data-scientist-where-the-jobs-are-and-what-employers-are-looking-for/#5b0628ce5760

   There were on average 2009 unique job postings active per month for data scientists over the past 9 years

   https://www.forbes.com/sites/louiscolumbus/2017/05/13/ibm-predicts-demand-for-data-scientists-will-soar-28-by-2020/#29aa079b7e3b

   Annual demand for the fast-growing new roles of data scientists, data developers, and data engineers will reach nearly 700,000 openings by 2020.

   http://www.computerscienceonline.org/degree-programs/data-science/

According to research from executive recruiting company Burtch Works, a majority of professional data scientists (92 percent) hold a graduate degree.

http://www.mastersindatascience.org/careers/data-scientist/

9. Provide current and proposed curriculum outline by semester.

For undergraduate programs, please also fill out 8-semester plan at end of document.

Indicate total semester credit hours required for the proposed program. Underline new courses and provide new course descriptions. (If existing courses have been modified to create new courses, provide the course name/description for the current/existing courses and indicate the related new/modified courses.) Identify required general education core courses with an asterisk.

Current M.S. in Computer Science Curriculum

M.S. Computer Science		
Course Number	Course Title	Credit Hours
CS 5713	Analysis of Algorithms	3
Select One of the Following		
CS 5133	Compiler	3
CS 5723	Automata Theory	
Select One of the Following		
CS 5313	Computer Networks	3
CS 6213	Parallel Processing	
CS 6243 (pre fall 2017 #s were 6233 & 6823)	Distributed Systems	
CS 6253 (pre fall 2017 #s were 6223 & 6823)	Heterogeneous Computing (pre fall 2017 name was High Performance Computing)	
Computer Science Electives (Choose 18 hours)		
	including CS courses such as: CS 5543 Database Systems CS 5623 Fundamentals of Data Science CS 6443 Machine Learning CS 6523 Data Mining Techniques CS 6543 Advanced Database Systems	18
CS/MATH/STAT Electives (Choose 6 hours)		
	including CS/MATH/STAT courses such as: STAT 6433 Time Series Analysis STAT 6643 Multivariate Analysis STAT 6653 Data Analysis I: Regression Analysis STAT 6663 Data Analysis II: Analysis of Variance (ANOVA)	6

Proposed Graduate Certificate in Data Science

Course Number	Course Title	Credit Hours
Semester 1		
CS 5543	Database Systems	3
Semester 2		
CS 5623	Fundamentals of Data Science	3
Semester 3		
CS 6523	Data Mining Techniques	3
Semester 4		
Choose Two Electives (6 hours)		
CS 6443	Machine Learning	6
CS 6543	Advanced Database Systems	
STAT 6433	Time Series Analysis	
STAT 6643	Multivariate Analysis	
STAT 6653	Data Analysis I: Regression Analysis	
STAT 6663	Data Analysis II: Analysis of Variance (ANOVA)	
Total Credit Hours		15

New/modified courses:

- CS 5623, Fundamentals of Data Science
  Study of the practices and techniques associated with data science, including programming for data analytics, modern technologies for data access in distributed and parallel systems, and an overview of machine learning models.
- CS 6523, Data Mining Techniques (*offered to date as a special topics subject*, *CS6823*)
  Exploration of the algorithms and methodologies in knowledge discovery and data mining used to find information or knowledge of interest in large data sets efficiently.
- CS 6443, Machine Learning (*offered to date as a special topics subject*, *CS6823*)
  The theory and practice of machine learning from a variety of perspectives. Topics include supervised learning (classification, regression); unsupervised learning (clustering, dimensionality reduction); reinforcement learning; and computational learning theory.

- CS 6543, Advanced Database Systems (*offered to date as a special topics subject, CS6823*)
  A study of the internals of database systems as a basis for system implementation and performance tuning. Topics include database system architecture, transactions and serializability, recovery from errors, query optimization, and new technologies in database systems.
- STAT 6433, Time Series Analysis (*offered to date as a seminar subject, MATH 669V*)
  Topics include stochastic processes, stationarity, autocovariance and autocorrelation, filtering and smoothing, ARMA processes, and spectral analysis.

10. Provide program budget. Indicate amount of funds available for reallocation.
    See end of document.

11. Provide current and proposed organizational chart. *See end of document.*

12. Institutional curriculum committee review/approval date: Enter text...

13. Are the existing degrees offered off-campus or via distance delivery? No

14. Will the proposed degree be offered on-campus, off-campus, or via distance delivery?
    On-campus

15. Identify mode of distance delivery or the off-campus location for the proposed program.
    N/A

16. Provide documentation that proposed program has received full approval by licensure/certification entity, if required.
    (A program offered for teacher/education administrator licensure must be reviewed/approved by the Arkansas Department of Education prior to consideration by the Coordinating Board; therefore, the Education Protocol Form also must be submitted to ADHE along with the Letter of Notification).

    N/A, program does not lead to licensure/certification

17. Provide copy of e-mail notification to other institutions in the area of the proposed program and their responses; include your reply to the institutional responses. *See end of document.*

18. List institutions offering similar program and identify the institutions used as a model to develop the proposed program.

    University of Arkansas at Little Rock – Graduate Certificate in Data Science
    University of Memphis – Graduate Certificate in Data Science
    University of Missouri – Graduate Certificate in Data Science

    Model used to develop program was the A-State M.S. in Computer Science program

19. Provide scheduled program review date (within 10 years of program implementation).
    Spring 2028

20. Provide additional program information if requested by ADHE staff.
    Enter text...

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic officer: _____ Date:

Name (printed):

8-Semester Plan

(referenced in #9 - Undergraduate Proposals Only)

Instructions: Please identify new courses in italics.

Arkansas State University-
Jonesboro Degree:
Major:
Year:

Students requiring developmental course work based on low entrance exam scores (ACT, SAT, ASSET, COMPASS) may not be able to complete this program of study in eight (8) semesters. Developmental courses do not count toward total degree hours. **Students having completed college level courses prior to enrollment will be assisted by their advisor in making appropriate substitutions. In most cases, general education courses may be interchanged between semesters.** A minimum of 45 hours of upper division credit (3000-4000 level) is required for this degree.

Year 1					Year 1			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 2					Year 2			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 3					Year 3			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 4					Year 4			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			

Total Jr/Sr Hours ___ **Total Degree Hours** ___

Graduation Requirements:

Program Budget
(referenced in # 10)

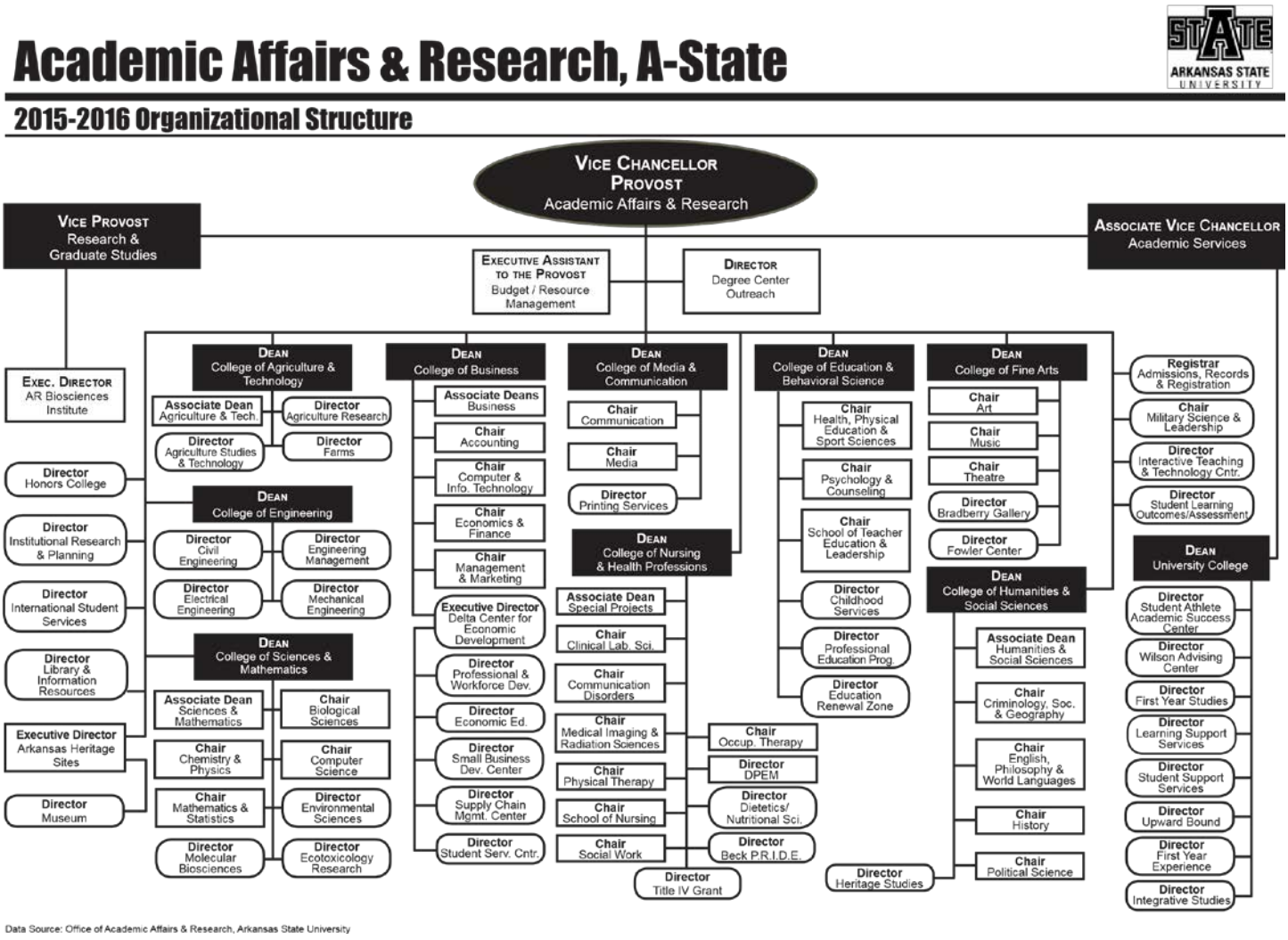
Provide program budget. Indicate amount of funds available for reallocation.

All but one of the courses involved are already being taught as special topics; the rotation will be revised to provide an opening for the one new course. Consequently, there will be no extra funds required.

Organizational Chart
(referenced in # 11)

Provide current and proposed organizational chart. Include where the proposed program will be housed (department/college).

Organizational Chart will remain the same.



Written Notification to Other Institutions
(referenced in # 17)

This should include a copy of written notification to other institutions in area of proposed program and responses

According to the office of Vice Chancellor for Academic Affairs, this is not required for this certificate

Student Learning Outcomes

Provide outcomes that students will accomplish during or at completion of this reconfigured degree. Fill out the following table to develop a continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Note: Best practices suggest 4-7 outcomes per program; minors would have 1 to 4 outcomes.

Outcome 1	A deeper understanding of the theory and application of data science algorithms and processes.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 5543, Database Systems CS 5623, Fundamentals of Data Science CS 6523, Data Mining Techniques CS 6443, Machine Learning CS 6543, Advanced Database Systems
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 2	The ability to apply data science analysis techniques to problem identification.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 5543, Database Systems CS 5623, Fundamentals of Data Science CS 6523, Data Mining Techniques CS 6443, Machine Learning CS 6543, Advanced Database Systems STAT 6433, Time Series Analysis STAT 6643, Multivariate Analysis STAT 6653, Data Analysis I: Regression Analysis STAT 6663, Data Analysis II: Analysis of Variance
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 3	The ability to apply data science implementation techniques to problem solution.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 5543, Database Systems CS 5623, Fundamentals of Data Science CS 6523, Data Mining Techniques CS 6443, Machine Learning CS 6543, Advanced Database Systems
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Please repeat as necessary.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

Reconfiguration of Existing Degree Program Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand	9/27/2017		ENTER DATE
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Hung-Chi Su	9/27/2017		ENTER DATE
Department Chair:		**Head of Unit (If applicable)**	
David F. Gilmore	10/6/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Anne A. Grippo	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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i. Proposed Program Title
Graduate Certificate in High Performance Computing

ii. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

iii. Proposed Starting Date
Spring 2018

iv. Is there differential tuition requested? *If yes, please fill out the New Program/Tuition and Fees Change Form.*
No

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

****For new programs, please insert copy of all sections where this is referenced.****

Insert Page 52 of 2017-18 Graduate Bulletin under Graduate Certificates:

Educational Leadership —Building Level Administration —Curriculum Director —Gifted, Talented and Creative Director —Instructional Specialist - Gifted, Talented and Creative —K-12 Special Education —Special Education Director
Dyslexia Therapy
History
Health Care Management
Health Communication
Healthcare Emergency Management
Health Sciences Education
Clinical Mental Health Counseling
Nurse Educator
Play Therapy
High Performance Computing

Insert Page 244 of 2017-18 Graduate Bulletin:

The College of Sciences and Mathematics offers work leading to the Master of Arts degree in biology; to the Master of Science degree with majors in biology, chemistry, computer science, environmental sciences, and mathematics; to the Master of Science in molecular biosciences; to the Master of Science in Education degree with majors in biology, chemistry, and mathematics; and to the Graduate Certificate in High Performance Computing.

Insert Page 262 of 2017-18 Graduate Bulletin After Program of Study for M.S. Computer Science:

University Requirements:
See Graduate School Degree Policies for additional information (p. 35)

Program Requirements:	Sem. Hrs.
CS 6213, Parallel Processing	3
CS 6243, Heterogeneous Computing	3
CS 6253, Distributed Systems	3
Electives:	6
Select six hours from the following:	
CS 5223, Unix Systems Programming	
CS 6223, Advanced Computer Architecture	
CS 6233, Operating System Design	
CS 6263, Cloud Computing	
Total Required Hours:	15

LETTER OF NOTIFICATION – 11

RECONFIGURATION OF EXISTING DEGREE PROGRAMS

(Consolidation or Separation of Degrees to Create New Degree)

*Please include the documents to be submitted found throughout this LON at the end of the form.

1. Institution submitting request: *Arkansas State University*

2. Contact person/title: *Dr. Hung-Chi Su, Chair of Computer Science Department*

3. Title(s) of degree programs to be consolidated/reconfigured:
   Master of Science in Computer Science

4. Current CIP Code(s)/Current Degree Code(s): *11.0101*

5. Proposed title of consolidated/reconfigured program: *Graduate Certificate in High Performance Computing*

6. Proposed CIP Code for new program: *11.0301*

7. Proposed Effective Date: *Spring 2018*

8. Reason for proposed program consolidation/reconfiguration:
   (Indicate student demand (projected enrollment) for the proposed program and document that the program meets employer needs)

Reconfiguring the M.S. in Computer Science degree to create a graduate certificate in High Performance Computing. The courses will be pulled from the MS Computer Science Elective courses.

There is a rising demand for students who have expertise in High Performance Computing from corporations, nonprofit companies, agencies and educational institutions.

The projected enrollment will be 35 students per section.

http://forecasting.tstc.edu/techbriefs/high-performance-computing/

Technology has shifted from supercomputers to clusters and grids of commercial off-the-self microcomputers, and thus moving HPC into the mainstream marketplace through business, education, government, and the military. This shift has, in turn, created a demand for HPC technicians, who are in short supply.

Students graduating with HPC skills will have job opportunities across education, military, government, and industry sectors.

http://www.sciencemag.org/careers/2012/03/data-deluge-drives-demand

As researchers produce more and more data to crunch, national labs and university-affiliated supercomputer centers are expanding and building new supercomputers, which need more and more computer scientists with high-performance computing skills to program and operate them.

"We are certainly having trouble finding people with the appropriate skills," says William Gropp, a professor of computer science at the University of Illinois, Urbana-Champaign, which is installing a new supercomputer called Blue Waters. "Everyone that I've spoken to has said that hiring is a problem."

9. Provide current and proposed curriculum outline by semester.

For undergraduate programs, please also fill out 8-semester plan at end of document.

Indicate total semester credit hours required for the proposed program. Underline new courses and provide new course descriptions. (If existing courses have been modified to create new courses, provide the course name/description for the current/existing courses and indicate the related new/modified courses.) Identify required general education core courses with an asterisk.

Current M.S. in Computer Science Curriculum

M.S. Computer Science		
Course Number	Course Title	Credit Hours
CS 5713	Analysis of Algorithms	3
Select One of the Following		
CS 5133	Compiler	3
CS 5723	Automata Theory	
Select One of the Following		
CS 5313	Computer Networks	3
CS 6213	Parallel Processing	
CS 6243 (pre fall 2017 #s were 6233 & 6823)	Distributed Systems	
CS 6253 (pre fall 2017 #s were 6223 & 6823)	Heterogeneous Computing (pre fall 2017 name was High Performance Computing)	
Computer Science Electives (Choose 18 hours)		
CS Elective		18
CS Elective		
CS Elective		
CS Elective		
CS Elective		
CS Elective		
CS/MATH/STAT Electives (Choose 6 hours)		
CS/MATH/STAT Elective		6
CS/MATH/STAT Elective		

Proposed Graduate Certificate in High Performance Computing

Course Number	Course Title	Credit Hours
Semester 1		
CS 6213	Parallel Processing	3
Semester 2		
CS 6253	Heterogeneous Computing	3
Semester 3		
CS 6243	Distributed Systems	3
Semester 4		
Choose Two Electives (6 hours)		
CS 5223	Unix Systems Programming	6
CS 6223	Advanced Computer Architecture	
CS 6233	Operating System Design	
CS 6263	Cloud Computing	
Total Credit Hours		15

New courses:

- CS 6243, Distributed Systems (*offered to date as a special topics subject, CS6823*)
  Advanced topics on distributed computing systems including computing models, cluster computing, grid computing, service computing, virtual machines, computing in the cloud, peer-to-peer computing and major distributed algorithms.
- CS 6253, Heterogeneous Computing (*offered to date as a special topics subject, CS6823*)
  The study of the ecosystem of co-processing elements such as the Graphics Processing Unit or GPU in modern computing systems, covering hardware architecture, software design, the programming paradigm, and related libraries.
- CS 6223, Advanced Computer Architecture (*offered to date as a special topics subject, CS6823*)
  Advanced topics on computer architecture, including: memory hierarchy design; instruction-level parallelism in pipelines; data-level parallelism in vector, SIMD and GPU architectures; thread-level parallelism; warehouse-scale computers.
- CS 6233, Operating System Design (*offered to date as a special topics subject, CS6823*)
  Advanced topics on the design and implementation of major operating systems, including memory management, kernel data structures, process management, file systems, devices and modules.
- CS 6263, Cloud Computing
  Major aspects of the cloud ecosystem including conceptual basis, design, virtualization, architecture, storage, programming paradigms, and software development.

10. Provide program budget. Indicate amount of funds available for reallocation.
See end of document.

11. Provide current and proposed organizational chart. *See end of document.*

12. Institutional curriculum committee review/approval date: Enter text...

13. Are the existing degrees offered off-campus or via distance delivery? No

14. Will the proposed degree be offered on-campus, off-campus, or via distance delivery?
On-campus

15. Identify mode of distance delivery or the off-campus location for the proposed program.
N/A

16. Provide documentation that proposed program has received full approval by licensure/certification entity, if required.
(A program offered for teacher/education administrator licensure must be reviewed/approved by the Arkansas Department of Education prior to consideration by the Coordinating Board; therefore, the Education Protocol Form also must be submitted to ADHE along with the Letter of Notification).

N/A, program does not lead to licensure/certification

17. Provide copy of e-mail notification to other institutions in the area of the proposed program and their responses; include your reply to the institutional responses. *See end of document.*

18. List institutions offering similar program and identify the institutions used as a model to develop the proposed program.

The George Washington University – Graduate Certificate in High Performance Computing
University of Illinois at Urbana-Champaign – Undergraduate Certificate in High Performance Computing
Michigan State University – Graduate Certificate in High Performance Computing
Kennesaw State University – Graduate Certificate in High Performance Computing Clusters

Model used to develop program was the A-State M.S. in Computer Science program

19. Provide scheduled program review date (within 10 years of program implementation).
Spring 2028

20. Provide additional program information if requested by ADHE staff.
Enter text...

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic officer: _____ Date:

Name (printed):

8-Semester Plan

(referenced in #9 - Undergraduate Proposals Only)

Instructions: Please identify new courses in italics.

Arkansas State University-
Jonesboro Degree:
Major:
Year:

Students requiring developmental course work based on low entrance exam scores (ACT, SAT, ASSET, COMPASS) may not be able to complete this program of study in eight (8) semesters. Developmental courses do not count toward total degree hours. **Students having completed college level courses prior to enrollment will be assisted by their advisor in making appropriate substitutions. In most cases, general education courses may be interchanged between semesters.** A minimum of 45 hours of upper division credit (3000-4000 level) is required for this degree.

Year 1					Year 1			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 2					Year 2			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 3					Year 3			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			
Year 4					Year 4			
Fall Semester					Spring Semester			
Course No.	Course Name	Hrs	Gen Ed		Course No.	Course Name	Hrs	Gen Ed
Total Hours					Total Hours			

Total Jr/Sr Hours ___ **Total Degree Hours** ___

Graduation Requirements:

Program Budget
(referenced in # 10)

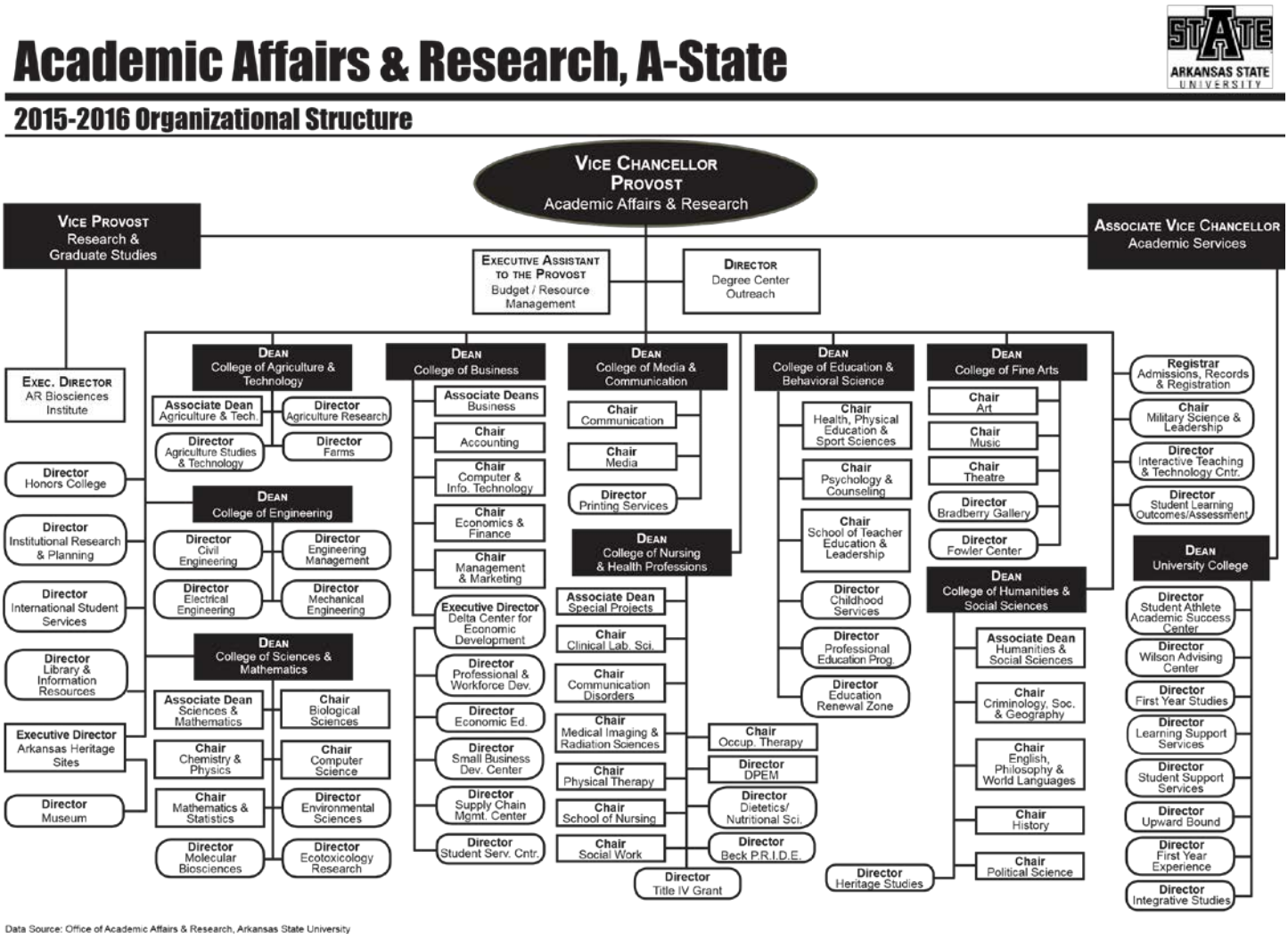
Provide program budget. Indicate amount of funds available for reallocation.

All but one of the courses involved are already being taught as special topics; the rotation will be revised to provide an opening for the one new course. Consequently, there will be no extra funds required.

Organizational Chart
(referenced in # 11)

Provide current and proposed organizational chart. Include where the proposed program will be housed (department/college).

Organizational Chart will remain the same.



Written Notification to Other Institutions
(referenced in # 17)

This should include a copy of written notification to other institutions in area of proposed program and responses

According to the office of Vice Chancellor for Academic Affairs, this is not required for this certificate

Student Learning Outcomes

Provide outcomes that students will accomplish during or at completion of this reconfigured degree. Fill out the following table to develop a continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Note: Best practices suggest 4-7 outcomes per program; minors would have 1 to 4 outcomes.

Outcome 1	A deeper understanding of the theory and application of high performance computing algorithms and processes.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 5223, Unix Systems Programming CS 5313, Computer Networks CS 6213, Parallel Processing CS 6223, Advanced Computer Architecture CS 6233, Operating System Design CS 6243, Distributed Systems CS 6253, Heterogeneous Computing CS 6263, Cloud Computing
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 2	The ability to apply high performance analysis techniques to problem identification.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6213, Parallel Processing CS 6223, Advanced Computer Architecture CS 6233, Operating System Design CS 6243, Distributed Systems CS 6253, Heterogeneous Computing CS 6263, Cloud Computing
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Outcome 3	The ability to apply high performance computing implementation techniques to problem solution.
Assessment Procedure Criterion	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CS 6213, Parallel Processing CS 6223, Advanced Computer Architecture CS 6233, Operating System Design CS 6243, Distributed Systems CS 6253, Heterogeneous Computing CS 6263, Cloud Computing
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department assessment committee

Please repeat as necessary.

For Academic Affairs and Research Use Only	
CIP Code:	
Degree Code:	

Reconfiguration of Existing Degree Program Proposal Form

[ ] **Undergraduate Curriculum Council**

[X] **Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

Edward Hammerand	9/27/2017	Rob Williams	10/25/2017
Department Curriculum Committee Chair		**COPE Chair (if applicable)**	
Hung-Chi Su	9/27/2017		ENTER DATE
Department Chair:		**Head of Unit (If applicable)**	
David F. Gilmore	10/6/2017		ENTER DATE
College Curriculum Committee Chair		**Undergraduate Curriculum Council Chair**	
Anne A. Grippo	10/6/2017		ENTER DATE
College Dean		**Graduate Curriculum Committee Chair**	
	ENTER DATE		ENTER DATE
General Education Committee Chair (If applicable)		**Vice Chancellor for Academic Affairs**	

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i. Proposed Program Title
Master of Science in Education in Computer Science

ii. Contact Person (Name, Email Address, Phone Number)
Dr. Hung-Chi Su, suh@astate.edu, 870-680-8119

iii. Proposed Starting Date
8/15/2018

iv. Is there differential tuition requested? *If yes, please fill out the New Program/Tuition and Fees Change Form.*
No

Bulletin Changes

Instructions

Please visit http://www.astate.edu/a/registrar/students/bulletins/index.dot and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.

***Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**

- Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)
- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).
- Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)

You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the 'format painter' icon → Format Painter *, and selecting the text you would like to apply the change to.*
Please visit https://youtu.be/yjdL2n4lZm4 for more detailed instructions.

****For new programs, please insert copy of all sections where this is referenced.****

On page 51 of 2017-18 Graduate Bulletin

Master of Science in Education (M.S.E.)

Biology
Chemistry
Computer Science
Curriculum and Instruction —Curriculum Director Track —Gifted, Talented and Creative Director Track —Special Education Director Track
Early Childhood Education
English
Educational Theory and Practice
Educational Leadership
Mathematics
Middle Level Education
Physical Education
Reading
Social Science
Special Education —Gifted, Talented, and Creative —Instructional Specialist K-12

On page 244 of 2017-18 Graduate Bulletin:

PROGRAMS OF STUDY
The College of Sciences and Mathematics offers work leading to the Master of Arts degree in biology; to the Master of Science degree with majors in biology, chemistry, computer science, environmental sciences, and mathematics; to the Master of Science in molecular biosciences; to the Master of Science in Education degree with majors in biology, chemistry, computer science, and mathematics.

After page 274 of 2017-2018 Graduate Bulletin:

Program of Study for the Master of Science in Education Degree in Computer Science

ADMISSION REQUIREMENTS

Students seeking admission into the Master of Science in Education degree program in Computer Science must meet the admission requirements of Graduate Admissions and the specific program requirements. In addition, applicants must have completed a minimum of 18 hours of professional education courses including the requirements for a valid teaching certificate based on a four-year teacher education program. Applicants who do not meet the requirements for a valid teaching certificate based on a four-year teacher education program will be required to complete the undergraduate courses required for such a certificate. These courses may be completed concurrently with the graduate work, but must be completed before the degree is awarded. (This program does not lead to licensure.)

For unconditional admission, academic proficiency must be established through satisfaction of either of the following admission selection criteria:

- A minimum cumulative undergraduate grade point average of 3.00 (or 3.25 on the last 60 hours) or a minimum score of 300 on the combined verbal and quantitative sections of the Graduate Record Examination (GRE).

For conditional admission, academic proficiency must be established through satisfaction of either of the following admission selection criteria:

- A minimum cumulative undergraduate grade point average of 2.75 (or 3.00 on the last 60 hours) and a minimum score of 295 on the combined verbal and quantitative sections of the GRE.

Computer Science

Master of Science in Education

University Requirements:	
See Graduate Degree Policies for additional information (p. 35)	
Professional Education Core Courses:	**Sem. Hrs.**
ELFN 6763, Philosophies of Education OR PSY 6513, Advanced Educational Psychology	3
ELFN 6773, Introduction to Statistics and Research	3
Select one of the following: ELCI 5523, Middle School Curriculum ELCI 6063, Curriculum Management ELCI 6523, Secondary School Curriculum ELFN 6763, Philosophies of Education *(if not taken previously)* PSY 6513, Advanced Educational Psychology *(if not taken previously)*	3
Sub-total	9
Program Requirements:	**Sem. Hrs.**
CSED 5043 Principles of Computer Programming	3
CSED 5731 Principles of Abstract Structures	1
CSED 5231 Principles of Operating Systems	1
CSED 5241 Principles of Computer Organization	1
CSED 6113 Principles of Software Engineering	3
CSED 6713 Principles of Analysis of Algorithms	3
CSED 6723 Principles of Automata Theory	3
CS Electives (select two of the following):	6
CS 5223 UNIX Systems Programming	
CS 5313 Computer Networks	
CS 5543 Database Systems	
Sub-total	21
Total Required Hours:	**30**

LETTER OF NOTIFICATION – 11

RECONFIGURATION OF EXISTING DEGREE PROGRAMS

(Consolidation or Separation of Degrees to Create New Degree)

*Please include the documents to be submitted found throughout this LON at the end of the form.

1. Institution submitting request: *Arkansas State University*

2. Contact person/title: *Dr. Hung-Chi Su, Chair of Computer Science Department*

3. Title(s) of degree programs to be consolidated/reconfigured:
   Master of Science in Computer Science

4. Current CIP Code(s)/Current Degree Code(s): *11.0101*

5. Proposed title of consolidated/reconfigured program:
   Master of Science in Education in Computer Science

6. Proposed CIP Code for new program: *13.1321*

7. Proposed Effective Date: *8/15/2018*

8. Reason for proposed program consolidation/reconfiguration:
   (Indicate student demand (projected enrollment) for the proposed program and document that the program meets employer needs)

   The program has been designed to accommodate an anticipated initial enrollment at launch of five to ten students with a slow increase after that. This is in part due to the logistical demands of pursuing the degree placed on in-service teachers, who make up the potential student body. As the program develops, methods of offering at least some of the course work online are being considered to grow the program further.

   Documenting that the program meets employer needs:

   "Arkansas Governor Hutchinson has overseen passage of the first truly comprehensive law requiring all public and charter high schools to offer computer sciences courses to students, beating better known tech centers like California and New York to the punch."

   https://www.wired.com/2015/03/arkansas-computer-science/

   "Arkansas, for example, is scrambling to hire and train enough qualified teachers. As Arkansas Governor Asa Hutchinson stated at the time the new mandate became law, only 20 high school teachers across the entire state were actually prepared to teach computer science."

   http://fortune.com/2015/10/22/u-s-students-computer-science/

The Arkansas Department of Education designated the following as critical academic shortage areas for the 2016-2017 school year: Computer Science.

http://www.arkansased.gov/public/userfiles/HR_and_Educator_Effectiveness/HR_Educator_Licensure/CSA_PPT_from_Dec_2015_FINAL_with_Notes-11266.pdf

"Successful implementation of computer science standards may hinge on one thing: teacher capacity. Without enough qualified teachers and the resources to support them, states will be hard pressed to make computer science a part of every student's education—something that industry leaders say is critical to career readiness."

http://www.nasbe.org/state-innovation/preparing-computer-science-teachers-in-maryland-and-arkansas/

U.S. Department of Education Teacher Shortage Areas Nationwide Listing 2016-2017 Arkansas: Computer Science

https://www2.ed.gov/about/offices/list/ope/pol/tsa.pdf

9. Provide current and proposed curriculum outline by semester.
For undergraduate programs, please also fill out 8-semester plan at end of document.
Indicate total semester credit hours required for the proposed program. Underline new courses and provide new course descriptions. (If existing courses have been modified to create new courses, provide the course name/description for the current/existing courses and indicate the related new/modified courses.) Identify required general education core courses with an asterisk.

Current M.S. in Computer Science Curriculum		Credit Hours
Algorithms:		3
CS 5713	Algorithms	
Theory (select one of the following):		3
CS 5133	Compilers	
CS 5723	Automata Theory	
Systems (select one of the following):		3
CS 5313	Computer Networks	
CS 6213	Parallel Processing	
CS 6223	High Performance Computing	
CS 6233	Distributed Systems	
Computer Science Electives (Choose 18 hours)		
	including courses such as: CS 5223 UNIX Systems Programming CS 5313 Computer Networks CS 5543 Database Systems	18
Computer Science, Mathematics, and/or Statistics Electives		6
Total Credit Hours		33

Proposed M.S.E. in Computer Science Curriculum		Credit Hours
Professional Education Core Courses:		9
ELFN 6773	Introduction to Statistics and Research	
Professional Education Core Courses (select one of the following):		
ELFN 6763	Philosophies of Education	
PSY 6513	Advanced Educational Psychology	
Professional Education Core Courses (select one of the following):		
ELCI 6063	Curriculum Management	
ELCI 6523	Secondary School Curriculum	
ELFN 6763	Philosophies of Education (if not taken previously)	
PSY 6513	Advanced Educational Psychology (if not taken previously)	
Computer Science Core Courses:		15
CSED 5043	Principles of Computer Programming	
CSED 5731	Principles of Abstract Structures	
CSED 5231	Principles of Operating Systems	
CSED 5241	Principles of Computer Organization	
CSED 6113	Principles of Software Engineering	
CSED 6713	Principles of Analysis of Algorithms	
CSED 6723	Principles of Automata Theory	
Computer Science electives (select two of the following):		6
CS 5223	UNIX Systems Programming	
CS 5313	Computer Networks	
CS 5543	Database Systems	
Total Credit Hours		30

Proposed M.S.E. in Computer Science Curriculum by semester		Credit Hours
Fall Semester		3
CSED 5043	Principles of Computer Programming	
Spring Semester		6
CSED 5731	Principles of Abstract Structures	
CSED 5231	Principles of Operating Systems	
CSED 5241	Principles of Computer Organization	
ELFN 6773	Introduction to Statistics and Research	
Summer Semester		6
CSED 6723	Principles of Automata Theory	
ELFN 6763 or PSY 6513	Philosophies of Education Advanced Educational Psychology	
Fall Semester (2019)		6
CSED 6113	Principles of Software Engineering	
CSED 6713	Principles of Analysis of Algorithms	
Spring Semester (2020)		6
CS elective (one of three)		
Professional Education Core Course (one of four)		
Summer Semester (2020)		3
CS elective (one of three)		
Total Credit Hours		30

New courses:

- CSED 5043. Principles of Computer Programming (*originated as subject in CS5012 & CS5022 & CS5032 accelerated programming and data structures courses*)
  Programming methodology, procedural abstraction, top-down design, object-oriented programming techniques, fundamental data structures such as linked lists, stacks, queues and binary trees, searching and sorting techniques, and an introduction to algorithm analysis, all with an emphasis on pedagogy in the secondary school.

- CSED 5731, Principles of Abstract Structures (*originated as subject in undergraduate special course CS482V*)
  Foundational computer science concepts, including algorithm complexity and structures such as sets, trees, and graphs, with an emphasis on pedagogy in the secondary school.

- CSED 5231, Principles of Operating Systems (*originated as subject in undergraduate special course CS482V*)
  Policies, design issues, and implementation techniques for operating system software with an emphasis on pedagogy in the secondary school.

- CSED 5241, Principles of Computer Organization
  Basic principles of computer architectural design with an emphasis on pedagogy in the secondary school.

- CSED 6113. Principles of Software Engineering (*originated as subject in CS5113 Software Engineering*)
  Techniques of design, implementation, quality assurance, and maintenance for large scale software systems with an emphasis on pedagogy in the secondary school.

- CSED 6713. Principles of Analysis of Algorithms (*originated as subject in CS5713 Analysis of Algorithms*)
  The analysis of space and time requirements of algorithms with an emphasis on pedagogy in the secondary school.

- CSED 6723. Principles of Automata Theory (*originated as subject in CS5723 Automata Theory*)
  Study formal languages and equivalent models of computation with an emphasis on pedagogy in the secondary school.

10. Provide program budget. Indicate amount of funds available for reallocation.
    See end of document.

11. Provide current and proposed organizational chart. *See end of document.*

12. Institutional curriculum committee review/approval date: Enter text...

13. Are the existing degrees offered off-campus or via distance delivery?

    No

14. Will the proposed degree be offered on-campus, off-campus, or via distance delivery?

    On-campus

15. Identify mode of distance delivery or the off-campus location for the proposed program.

    N/A

16. Provide documentation that proposed program has received full approval by licensure/certification entity, if required.
    (A program offered for teacher/education administrator licensure must be reviewed/approved by the Arkansas Department of Education prior to consideration by the Coordinating Board; therefore, the Education Protocol Form also must be submitted to ADHE along with the Letter of Notification).

    N/A, program does not lead to licensure/certification

17. Provide copy of e-mail notification to other institutions in the area of the proposed program and their responses; include your reply to the institutional responses. *See end of document.*

18. List institutions offering similar program and identify the institutions used as a model to develop the proposed program.

    University of Nebraska Omaha
    Nova Southeastern University

    Model used to develop program was the A-State M.S.E. in Mathematics program

19. Provide scheduled program review date (within 10 years of program implementation).

    Spring 2028

20. Provide additional program information if requested by ADHE staff.
    Enter text...

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic officer: _____ Date:

Name (printed):

8-Semester Plan

(referenced in #9 - Undergraduate Proposals Only)

Instructions: Please identify new courses in italics.

Arkansas State University-Jonesboro Degree:
Major:
Year:

Students requiring developmental course work based on low entrance exam scores (ACT, SAT, ASSET, COMPASS) may not be able to complete this program of study in eight (8) semesters. Developmental courses do not count toward total degree hours. **Students having completed college level courses prior to enrollment will be assisted by their advisor in making appropriate substitutions. In most cases, general education courses may be interchanged between semesters.** A minimum of 45 hours of upper division credit (3000-4000 level) is required for this degree.

Year 1 Fall Semester				Year 1 Spring Semester			
Course No.	Course Name	Hrs	Gen Ed	Course No.	Course Name	Hrs	Gen Ed
Total Hours				Total Hours			

Year 2 Fall Semester				Year 2 Spring Semester			
Course No.	Course Name	Hrs	Gen Ed	Course No.	Course Name	Hrs	Gen Ed
Total Hours				Total Hours			

Year 3 Fall Semester				Year 3 Spring Semester			
Course No.	Course Name	Hrs	Gen Ed	Course No.	Course Name	Hrs	Gen Ed
Total Hours				Total Hours			

Year 4 Fall Semester				Year 4 Spring Semester			
Course No.	Course Name	Hrs	Gen Ed	Course No.	Course Name	Hrs	Gen Ed
Total Hours				Total Hours			

Total Jr/Sr Hours ___ **Total Degree Hours** ___

Graduation Requirements:

Program Budget
(referenced in # 10)

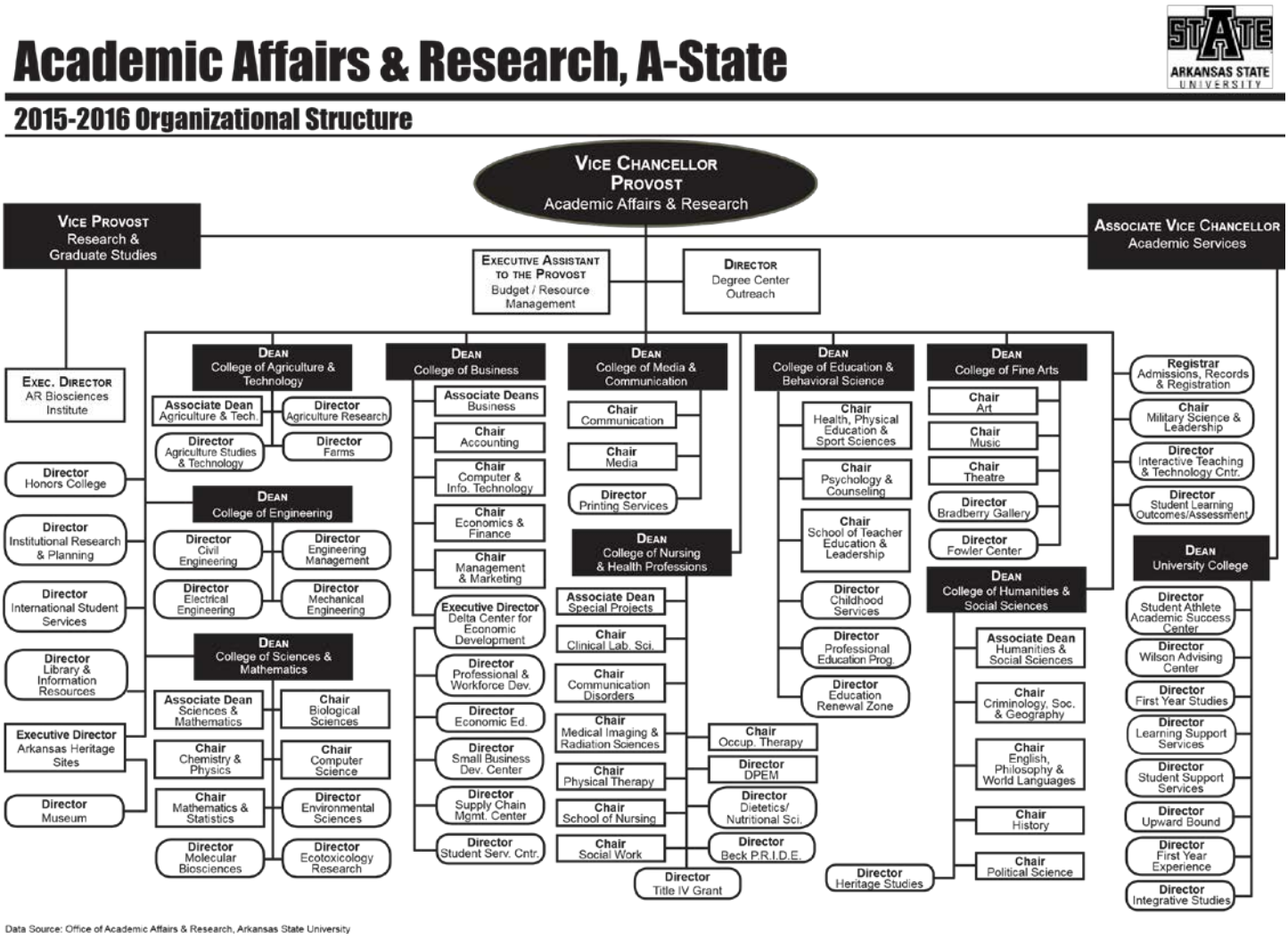
Provide program budget. Indicate amount of funds available for reallocation.

The program is based on the successful model used for the Master of Science in Education in Mathematics. Courses required will consist of existing education courses utilized by other education degrees, existing computer science (CS) courses, and some new computer science education (CSED) courses. While enrollment in the program is small, all of these new CSED courses save one hour (CSED 5241: Principles of Computer Organization) may be taught largely in conjunction with graduate CS courses already in the course rotation. This coupled with a slight adjustment to the regular course rotation will result in no new resources or faculty being required.

Organizational Chart
(referenced in # 11)

Provide current and proposed organizational chart. Include where the proposed program will be housed (department/college).

Organizational Chart will remain the same.



The proposed program will be housed in the Department of Computer Science in the College of Sciences and Mathematics.

Written Notification to Other Institutions
(referenced in # 17)

This should include a copy of written notification to other institutions in area of proposed program and responses

Student Learning Outcomes

Provide outcomes that students will accomplish during or at completion of this reconfigured degree. Fill out the following table to develop a continuous improvement assessment process.

For further assistance, please see the 'Expanded Instructions' document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.

Note: Best practices suggest 4-7 outcomes per program; minors would have 1 to 4 outcomes.

Outcome 1	Students will have a broad exposure to concepts in computer science.
Assessment Measure	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	CSED 5043, Principles of Computer Programming CSED 5731, Principles of Abstract Structures CSED 5231, Principles of Operating Systems CSED 5241, Principles of Computer Organization CSED 6113, Principles of Software Engineering CSED 6713, Principles of Analysis of Algorithms CSED 6723, Principles of Automata Theory CS 5223, UNIX Systems Programming CS 5313, Computer Networks CS 5543, Database Systems
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Outcome 2	Students will be able to think analytically in terms of understanding the nature of problems, crafting computer solutions for them, and evaluating those solutions.
Assessment Measure	Comprehensive examinations, student exit interview, and employer surveys
Which courses are responsible for this outcome?	CSED 5043, Principles of Computer Programming CSED 5731, Principles of Abstract Structures CSED 5231, Principles of Operating Systems CSED 5241, Principles of Computer Organization CSED 6113, Principles of Software Engineering CSED 6713, Principles of Analysis of Algorithms CSED 6723, Principles of Automata Theory CS 5223, UNIX Systems Programming CS 5313, Computer Networks CS 5543, Database Systems
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Outcome 3	Students will be able to communicate computer science concepts with clarity and effective exposition.
Assessment Measure	Comprehensive examinations, student exit interview and employer surveys
Which courses are responsible for this outcome?	CSED 5043, Principles of Computer Programming CSED 5731, Principles of Abstract Structures CSED 5231, Principles of Operating Systems CSED 5241, Principles of Computer Organization CSED 6113, Principles of Software Engineering CSED 6713, Principles of Analysis of Algorithms CSED 6723, Principles of Automata Theory
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; student exit interviews will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Outcome 4	Students will understand how educational philosophies impact teaching and student learning.
Assessment Measure	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	ELFN 6763, Philosophies of Education PSY 6513, Advanced Educational Psychology ELCI 6063, Curriculum Management ELCI 6523, Secondary School Curriculum
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Outcome 5	Students will understand the basic principles of learning and their applications to classroom management and instructional design.
Assessment Measure	Comprehensive examinations and employer surveys
Which courses are responsible for this outcome?	ELFN 6763, Philosophies of Education PSY 6513, Advanced Educational Psychology ELCI 6063, Curriculum Management ELCI 6523, Secondary School Curriculum
Assessment Timetable	Comprehensive exams will be conducted each semester, reviewed annually, and reported on every three years; employer surveys will be conducted each fall and reported on every four years.
Who is responsible for assessing and reporting on the results?	Department of Computer Science assessment committee

Please repeat as necessary.