Code # ED50 (2014) REV2

**New/Special Course Proposal-Bulletin Change Transmittal Form**

**Undergraduate Curriculum Council** - Print 1 copy for signatures and save 1 electronic copy.

**Graduate Council** - Print 1 copy for signatures and send 1 electronic copy to [mmcginnis@astate.edu](mailto:mmcginnis@astate.edu)

|  |
| --- |
| **New Course or**  **Special Course (Check one box)**  *Please complete the following and attach a copy of the catalogue page(s) showing what changes are necessary.* |

|  |  |
| --- | --- |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Chair:** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **General Education Committee Chair (If applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Vice Chancellor for Academic Affairs** |

1. Proposed Course Prefix and Number (For variable credit courses, indicate variable range.)

MLED 4022

2. 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).

Methods and Materials for Teaching Science

Methods Materials for Tch Sci

3. 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 problems, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

lecture

4. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental)?

Standard letter

5. Is this course dual listed (undergraduate/graduate)?

Yes, this course will be dual listed with MLED 5022 for our Masters of Arts in Teaching Degree Program. Course to be developed with the revision of the MAT program to bring it into compliance with Arkansas Department of Education licensure changes.

6. 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

7. Brief course description (40 words or fewer) as it should appear in the bulletin.

Current trends in teaching science at the middle school level, science process skills, teaching techniques, state and national science standards, curriculum development, use of facility resources and equipment**.**

8. Indicate all prerequisites and 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?

Prerequisites, Admission to the Teacher Education Program, MLED 3043, MLED 3053, GSP 3203, Co-requisite: MLED 4109, MLED 4042, One of the following specialty courses: MLED 4002, MLED 4012, MLED 4032

b. Why?

Background knowledge developed in these courses is needed for understanding the content, pedagogy, and strategies of the course.

9. Course frequency(e.g. Fall, Spring, Summer). Not applicable to Graduate courses.

Fall

10. Contact Person (Name, Email Address, Phone Number)

Dr. Ron Towery, Arkansas State University, Jonesboro. PO Box 2350, State University, AR 72467. Rtowery@astate.edu . 870-972-3059

11. Proposed Starting Term/Year

New program begins Fall 2015, first time this course offered is Fall 2016

12. Is this course in support of a new program? No

If yes, what program?

13. Does this course replace a course being deleted? yes

If yes, what course?

MLED 4023

Has this course number been used in the past? noi

*Submit Course Deletion Proposal-Bulletin Change Transmittal Form.*

14. 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.

Enter text...

15. Justification should include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

The teacher candidates will plan curricula which apply to state and national standards, including the Next Generation Science Standards and Arkansas Science Curriculum Frameworks; plan and use a variety of instructional strategies appropriate for teaching science in grades 4-8; and be able to integrate the curricula with content areas, technology, and Common Core State Standards for mathematics and English/language arts.

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 mission of the Department of Teacher Education encompasses three areas: teaching, service, and research. This course contributes significantly toward the accomplishment of the department’s goal of preparing Professionally Emerging Teachers and Emerging Professionals in the fields of middle level education.

**Specifically, the course will address the following ASU Learning to Teach, Teaching to Learn Conceptual Framework Standards**

Professionalism

Diversity

Communication Skills

Curriculum

Subject Matter

Teaching Models

Classroom Management

Assessment

Reflective Teaching

**Specifically, the course will address the following Association of Middle Level Education Standards**

Standard 1: Young Adolescent Development

Element c: Implications of Young Adolescent Development for Middle Level Curriculum and Instruction

Standard 2: Middle Level Curriculum

Element a: Subject Matter Content Knowledge

Element c: Interdisciplinary Nature of Knowledge

Standard 4: Middle Level Instruction and Assessment

Element a: Content Pedagogy

Element b: Middle Level Instructional Strategies

Element c: Middle Level Assessment and Data-informed Instruction

Element d: Young Adolescent Motivation

Standard 5: Middle Level Professional Roles

Element a: Professional Roles of Middle Level Teachers

Element d: Dispositions and Professional Behaviors

**Specifically, the course will address the following InTASC Standards**

The Learner and Learning

Standard 2: Learning Differences

Standard 3: Learning Environments

Content

Standard 4: Content Knowledge

Standard 5: Application of Content

Instructional Practice

Standard 6: Assessment

Standard 7: Planning for Instruction

Standard 8: Instructional Strategies

Professional Responsibilities

Standard 9: Professional Learning and Ethical Practice

Standard 10: Leadership and Collaboration.

Middle Level Education candidates

**This course supports the Arkansas Department of Education’s competencies for middle level education.**

1. **Integration of STEM (science, technology, engineering, and mathematics)**
   1. Develop and deliver STEM-integrated, student-centered lessons and lab investigations taking into account factors such as safety measures, grades 4-8 classroom dynamics, problem-solving, and project-based learning strategies, etc., which integrate grade-appropriate standards and practices
   2. Understand and apply the engineering design process used to solve real-world problems in grades 4-8 lessons1
   3. Collect, evaluate, synthesize, and share real-world data

1.7 Develop and deliver STEM lesson assessments (formative and summative)

1.9 Appreciate the nature of science and scientific inquiry through solving real-world problems

1.10 Develop and implement grades STEM units and lessons

**2. Vision for k-12 science education: scientific and engineering practices, cross cutting concepts, and core ideas**

2.1 Demonstrate a command for grades 4-8 science education-“… students, over multiple years of school, actively

engage in scientific and engineering practices ad apply crosscutting concepts to deepen their understanding of the

core ideas in these fields.”

2.5 Identify and implement lessons/units that integrate the scientific and engineering practices and crosscutting

concepts with each of the core ideas as specified in the performance expectations of the NGSS

2.6 Demonstrate content and science investigation teaching methods for grades 4-8 in the particular core ideas of one

of the following: physical sciences; life sciences; earth and space sciences; engineering, technology, and the

applications of science

2.7 Implement the Common Core State Standards for mathematic and English/language arts and ISTE Standards for

Teachers as they support NGSS

2.8 Demonstrate diverse teaching strategies for reading and writing informational texts like those read and written

by scientists

c. Student population served.

Middle level education candidates

d. Rationale for the level of the course (lower, upper, or graduate).

This course is taken during the same semester as the MLED 4109 Teaching Internship in order to facilitate integration of the methods and materials of teaching science with actual classroom teaching. Students will plan and teach selected lessons to be implemented in the field.

16. 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: Identifying students’ misconceptions, the nature of science, discrepant events

History of science education, trends in science education, national and state science standards (Arkansas Science Frameworks or Next Generation Science Standards (NGSS), if approved in Arkansas)

Week 2: Best practices in science teaching, levels of inquiry, modeling, lab safety, use of cooperative learning groups

Formative and summative assessment in middle school science

Week 3: Science curricula, Internet resources, AIMS, GEMS, SEPUP, FOSS, visit to ASU STEM Education Centers’ Teacher Access Center (resources for science teaching)

Labs and demonstrations, science fairs and field trips

Week 4: Hands-on science activities

Week 5: Mid-term Exam

Week 6: Implementing the Common Core State Standards for **M**athematics and E**ngish Language Arts** **(CCSS) a**s they support NGSS **or the Arkansas Science Frameworks**

Week 7: Formative and summative assessment in the science classroom, use of released items for testing

Weeks 8 - 13 (In the Field) Students will teach three

Week 14: Using technology in the science classroom (**e.g.,** probes, **sensors**)

Weeks 15: Student presentations; collecting and evaluating data in science lessons

17. Course requirements (e.g. research papers, projects, interviews, tests, etc.)

1. Each student will write a science/mathematics why is math incuded in the science methods class? Should the math be removed in this section? autobiography. Students will describe their personal experiences with science and math, in or out of school, and will use these experiences to describe the kind of science teacher they hope to become. As part of this assignment, they will also establish and describe their goals for personal development in teaching science and mathematics.
2. Students will critique articles from professional journals. The purpose of this activity is to introduce them to literature available to assist them in teaching and to acquaint them with alternative teaching strategies.
3. Each student will present a discrepant event to other students in the class.
4. Each student will teach an activity from one of the following curriculum guides: *Project WILD, Project WET, Project Learning Tree, Project Aquatic WILD* to the students in the class or students will attend a professional development workshop taught by one or more of the state facilitators for these projects.
5. Each student will teach an activity from the *GEMS* or *AIMS* activity guides or other similar curricula to the students in the class.
6. Each student will complete a lecture/presentation using Power Point about a science lesson that the student might use in a middle school science classroom.
7. Each student will find 10 Internet sites for use in science lesson plans. Each student will write a brief (a few sentences) description/critique of each site and share them with other students in the class.
8. Each student will plan and write a science inquiry lesson plan, using the 5e, 6e, or 7e format for writing a science inquiry lesson plan.
9. Each student will conduct an in-class discussion of a case study in science teaching and learning.
10. Each student will develop a textbook-based unit of instruction containing a minimum of five lessons, including a lab and other hands-on activities, a minimum of two formative assessments (with grading rubrics), and a summative evaluation with answer key. This unit will be planned with the clinical supervisor and will be taught during the field placement.

18. Special features (e.g. labs, exhibits, site visitations, etc.)

Students will be in a school-based internship throughout the semester rehearsing some of the strategies learned in the course; they will come back to campus occasionally for instruction and the instructor may also visit them at their field sites.

19. Department staffing and classroom/lab resources (Will this require additional faculty, supplies, etc.?)

No

20. What is the primary intended learning goal for students enrolled in this course?

Students will be able to teach science in grades 4-8. .

21. Reading and writing requirements:

a. Name of book, author, edition, company and year

Chiappetta, E. & Koballa, T. (2009). Science Instruction in the Middle and Secondary Schools, 7th edition. Upper Saddle River, NJ: Merrill

b. Number of pages of reading required per week: 50

c. Number of pages of writing required over the course of the semester: 30

22. High-Impact Activities (Check all that apply)

Collaborative assignments

Research with a faculty member

Diversity/Global learning experience

Service learning or community learning

Study abroad

Internship

Capstone or senior culminating experience

Other Explain: Enter text...

23. Considering the indicated primary goal (in Box #20), provide up to three outcomes that you expect of students after completion of this course.

**Outcome #1:** (For example, what will students who meet this goal know or be able to do as a result of this course?)

Students will be able to develop science lesson plans for early adolescent students.

Learning Activity:(For example, what instructional processes do you plan to use to help students reach this outcome?)

Students will do inquiry and hands-on activities in class – both those selected by the instructor and those conducted by the students from various sources of curricula. Lesson plan construction will be reviewed.

Assessment Tool: (For example, what will students demonstrate, represent, or produce to provide evidence of their learning?)

Students will write science lesson plans, which will be evaluated by the instructor using a rubric.

24. Please indicate the extent to which this course addresses university-level student learning outcomes:

* 1. Global Awareness

Minimally  
Indirectly  
Directly

* 1. Thinking Critically

Minimally  
Indirectly  
Directly

* 1. Using Technology

Minimally  
Indirectly  
Directly

**From the most current electronic version of the bulletin, copy all bulletin pages that this proposal affects and paste it to the end of this proposal.**

**To copy from the bulletin:**

1. Minimize this form.
2. Go to <http://registrar.astate.edu/bulletin.htm> and choose either undergraduate or graduate.
3. This will take you to a list of the bulletins by year, please open the most current bulletin.
4. Find the page(s) you wish to copy, click on the “select” button and highlight the pages you want to copy.
5. Right-click on the highlighted area.
6. Click on “copy”.
7. Minimize the bulletin and maximize this page.
8. Right-click immediately below this area and choose “paste”.
9. For additions to the bulletin, please change font color and make the font size larger than the surrounding text. Make it noticeable.
10. For deletions, strike through the text, change the font color, and enlarge the font size. Make it noticeable.

**~~MLED 4023. Methods and Materials for Teaching Mathematics and Science in the Middle Grades~~** ~~The course includes scientific and mathematical process skills, the interrelated nature of mathematics and science. Three clock hours of fieldwork is required. Prerequisites, Admission to the Teacher Education Program, MLED 3002, MLED 3003, MLED 3004, Pre- or corequisite, MLED 3073.. Fall.~~

MLED 4022 Methods and Materials for Teaching Science

Current trends in teaching science at the middle school level, science process skills, teaching techniques, state and national science standards, curriculum development, use of facility resources and equipment**.** Prerequisites, Admission to the Teacher Education Program, MLED 3043, MLED 3053, GSP 3203, Co-requisite: MLED 4109, MLED 4042, One of the following specialty courses: MLED 4002, MLED 4012, MLED 4032. Fall

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