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| For Academic Affairs and Research Use Only | |
| Proposal Number |  |
| CIP Code: |  |
| Degree Code: |  |

**New or Modified Course Proposal Form**

**[ ] Undergraduate Curriculum Council**

**[x ] Graduate Council**

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| **[x ]New Course, [ ]Experimental Course (1-time offering), or [ ]Modified Course (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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| Zahid Hossain & Christos Grecos 7/21/2022 **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| Abhijit Bhattacharyya 7/21/2022 **Department Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Head of Unit (if applicable)** |
| Brandon Kemp 7/21/2022  **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| Brandon Kemp 7/21/2022 **Director of Assessment (new courses only)** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
| Abhijit Bhattacharyya 7/21/2022 **College Dean** | Alan Utter 10/26/2022  **Vice Chancellor for Academic Affairs** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **General Education Committee Chair (if applicable)** |  |

1. **Contact Person (Name, Email Address, Phone Number)**

Zahid Hossain; mhossain@astate.edu; 870-680-4299 & Christos Grecos; cgrecos@astate.edu; 870-972-3938

1. **Proposed starting term and Bulletin year for new course or modification to take effect**

Fall 2023.

**Instructions:**

*Please complete all sections unless otherwise noted. For course modifications, sections with a “Modification requested?” prompt need not be completed if the answer is “No.”*

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|  | **Current (Course Modifications Only)** | **Proposed (New or Modified)**  *(Indicate “N/A” if no modification)* |
| **Prefix** |  | ECS |
| **Number\*** |  | 7003 |
| **Title**  (include a short title that’s 30 characters or fewer) |  | Ph.D. Research Design |
| **Description\*\*** |  | Ph.D. in ECS students enrolled in this course … |

***\**** Confirm with the Registrar’s Office that number chosen has not been used before and is available for use. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.

\*\*Forty words or fewer (excepting prerequisites and other restrictions) as it should appear in the Bulletin.

1. **Proposed prerequisites and major restrictions** **[Modification requested? Yes/No] No**

(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).

1. **Yes / No** Are there any prerequisites?  **Yes**
   1. If yes, which ones?

Ph.D. in ECS student and Permission of Professor

* 1. Why or why not?

Ph.D. level course designed for ECS student

1. **Yes / No** Is this course restricted to a specific major? **Yes**
   1. If yes, which major? Ph.D. in ECS
2. **Proposed course frequency [Modification requested? Yes/No] No**

(e.g. Fall, Spring, Summer; if irregularly offered, please indicate, “irregular.”) *Not applicable to Graduate courses.*

Fall, Spring, and Summer (including 7-week term for online offering)

1. **Proposed course type [Modification requested? Yes/No] No**

Will this course be lecture only, lab only, lecture and lab, activity (e.g., physical education), dissertation/thesis, capstone, independent study, internship/practicum, seminar, special topics, or studio? Please choose one.

Lecture only

1. **Proposed grade type [Modification requested? Yes/No] N/A**

What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard Letter

1. **Yes / No** Is this course dual-listed (undergraduate/graduate)? No
2. **Yes / No** 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 the cross-listed course.

Enter text...

**b.** – **Yes / No** Can the cross-listed course be used to satisfy the prerequisite or degree requirements this course satisfies? N/A

Enter text...

1. **Yes / No** Is this course in support of a new program?  **Yes**

a. If yes, what program?

Doctor of Philosophy in Engineering and Computer Science

1. **Yes / No** Will this course be a one-to-one equivalent to a deleted course or previous version of this course (please check with the Registrar if unsure)? **No**

a. If yes, which course?

Enter text...

**Course Details**

1. **Proposed outline** **[Modification requested? Yes/No] No**

(The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

As part of this course, students will work on their research- review literature, design test plans, execute the plan, document the findings, and present results in the form of a dissertation. The 16-week plan is shown below:

Week 1-2: Introduction and Roadmap

Week 3-5: Literature Review

Week 6-7: Presentation (Oral) of Existing Technical Paper(s)

Week 8-9: Empirical Design and Measurements

Week 10-11: Analysis and Discussion of Data

Week 12-14: Write Technical Paper (Thanksgiving Break)

Week 15-16: Present Technical Paper (Final Exam Week)

For the 7-week online and in-person (Engineering Management) mode, the weekly plan is as follows:

Week 1: Introduction and Roadmap

Week 3: Literature Review

Week 4: Presentation (Oral) of Existing Technical Paper(s)

Week 5: Empirical Design and Measurements

Week 6: Analysis and Discussion of Data

Week 7: Write and Present Technical Paper

1. **Proposed special features** **[Modification requested? Yes/No] No**

(e.g. labs, exhibits, site visitations, etc.)

Classes will be in a lecture setting (in-person and online)

1. **Department staffing and classroom/lab resources**
2. Will this require additional faculty, supplies, etc.?

It is expected that a newly hired faculty member as part of the new Ph.D. in ECS program would be teaching this course.

1. **Yes / No** Does this course require course fees? **Yes**

*If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.*

Will use the same course fees and tuition rates of the DOCTORATE OF ENVIRONMENTAL SCIENCES program as shown at <https://www.astate.edu/info/costs/doctorate/>

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|  | Costs |
| In-State Tuition *(per credit hour)* | $333.00 |
| Out-of-State Tuition *( per credit hour)* | $666.00 |
| International Tuition *(per credit hour)* | $666.00 |
| Required Hourly Fees | |
| Academic Excellence Fee | $10.00 |
| Access and Security Fee | $4.00 |
| Athletic Fee | $22.00 |
| Facilities Fee | $4.00 |
| Technology Fee | $10.00 |
| Infrastructure Fee | $4.00 |
| Library Fee | $6.00 |
| Student Recreation Fee | $7.00 |
| Student Union Fee | $10.00 |
| Deferred Maintenance Fee | $3.00 |
| CoECS Doctoral Support Fee | $67.00 |
| Total Per Credit Hour: | $147.00 |
| Required Term Fees | |
| Student Activity Fee *(3 or more hours)* | $20.00 |

For the online track (Engineering Management), the followings as shown for the DOCTORATE OF EDUCATIONAL LEADERSHIP program (https://www.astate.edu/info/costs/doctorate/) will be used

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|  | Costs |
| U.S. Resident Tuition *(per credit hour)* | $440.00 |
| International Tuition *( per credit hour)* | $800.00 |
| Required Hourly Fees | |
| A-State Online Fee | $40.00 |

**Justification**

**Modification Justification (Course Modifications Only) N/A**

1. Justification for Modification(s)

Enter text...

**New Course Justification (New Courses Only)**

1. Justification for course. Must include:

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

This is a required course of the newly proposed Ph.D. in Engineering and Computer Science program.

b. How does the course fit with the mission of the department? If course is mandated by an accrediting or certifying agency, include the directive.

As part of the Ph.D. in ECS program, the ADHE requires that students must complete 72 credit hours beyond their Bachelor’s degree or 42 hours beyond their Master’s degree. Of these hours, a significant number of credit hours should be core course hours as the ADHE further states that the curriculum must require demonstrated mastery of skills and knowledge against specified performance standards in a specific area or discipline, and must balance credit hours for required coursework, research, and dissertation preparation.

c. Student population served.

Approximately 25 students/semester

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

Graduate level-Ph.D. in ECS

**Assessment**

**Assessment Plan Modifications (Course Modifications Only)**

1. **Yes / No** Do the proposed modifications result in a change to the assessment plan? N/A

*If yes, please complete the Assessment section of the proposal*

**Relationship with Current Program-Level Assessment Process (Course modifications skip this section unless the answer to #18 is “Yes”)**

1. 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. Graduates will attain mastery of broad-based knowledge in engineering and/or computer science relevant to their research interests, including theories and laboratory experiments.
2. Graduates will achieve mastery of identifying pertinent research problems, formulating a research plan, and implementing research methodologies and advanced statistics, including quantitative and qualitative methods.
3. Graduates will demonstrate the ability to make original and significant contributions to the scientific knowledge base in their area of research.
4. Graduates will demonstrate the ability to execute a research plan, generate and analyze original research results, and communicate those results through oral presentations and written publications.
5. Graduates will become leaders in their profession- whether it is public, private, or charity- as well as become entrepreneurs.
6. Considering the indicated program-level learning outcome/s (from question #19), 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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| **Outcome 1** | Graduates will attain mastery of broad-based knowledge in engineering and/or computer science relevant to their research interests, including theories and laboratory experiments.  . |
| Assessment Procedure Criterion | Dissertation Defense and Graduate Survey |
| Which courses are responsible for this outcome? | ECS 889V Dissertation |
| Assessment  Timetable | Data will be reported every second year starting 2024-2025. |
| Who is responsible for assessing and reporting on the results? | Dissertation Advisor, Dissertation Committee, and Program Director |

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| **Outcome 2** | Graduates will achieve mastery of identifying pertinent research problems, formulating a research plan, and implementing research methodologies and advanced statistics, including quantitative and qualitative methods. |
| Assessment Procedure Criterion | Dissertation Defense at the end of degree program; Graduate survey |
| Which courses are responsible for this outcome? | ECS 889V Dissertation |
| Assessment  Timetable | Data will be reported every second year starting 2025-2026. |
| Who is responsible for assessing and reporting on the results? | Dissertation Advisor, Dissertation Committee, and Program Director |

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| **Outcome 3** | Graduates will demonstrate the ability to make original and significant contributions to the scientific knowledge base in their area of research. |
| Assessment Procedure Criterion | Dissertation Defense at the end of degree program and Graduate survey. |
| Which courses are responsible for this outcome? | ECS 889V Dissertation |
| Assessment  Timetable | Data will be reported every second year starting 2025-2026. |
| Who is responsible for assessing and reporting on the results? | Dissertation Advisor, Dissertation Committee, and Program Director |

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| **Outcome 4** | Graduates will demonstrate the ability to execute a research plan, generate and analyze original research results, and communicate those results through oral presentations and written publications. |
| Assessment Procedure Criterion | Dissertation Defense; Graduate survey and alumni survey. |
| Which courses are responsible for this outcome? | ECS 889V Dissertation |
| Assessment  Timetable | Data will be reported every second year starting 2024-2025. |
| Who is responsible for assessing and reporting on the results? | Dissertation Advisor, Dissertation Committee, and Program Director |

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| **Outcome 5** | Graduates will become leaders in their profession- whether it is public, private, or charity- as well as become entrepreneurs. |
| Assessment Procedure Criterion | Dissertation Defense; Graduate survey and alumni survey |
| Which courses are responsible for this outcome? | ECS 889V Dissertation |
| Assessment  Timetable | Data will be reported every second year starting 2025-2026. |
| Who is responsible for assessing and reporting on the results? | Dissertation Advisor, Dissertation Committee, and Program Director |

*(Repeat if this new course will support additional program-level outcomes)*

**Course-Level Outcomes**

1. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

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| **Outcome 1** | Type outcome here. What do you want students to think, know, or do when they have completed the course?  Students will be able to conduct literature reviews to guide the research design |
| Which learning activities are responsible for this outcome? | List learning activities.  Students will review existing literature pertinent to a given research problem/topic. |
| Assessment Measure | What will be your assessment measure for this outcome? An assignment requiring to review existing literature. |

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| **Outcome 2** | Type outcome here. What do you want students to think, know, or do when they have completed the course?  Students will be able to learn research methods in their tracks (Engineering, computer Science, or Engineering Management), including design, data analysis, and interpretation to a research project. |
| Which learning activities are responsible for this outcome? | List learning activities.  Students will conduct literature review, come-up with their research design, and learn how to analyze and interpret collected data. |
| Assessment Measure | What will be your assessment measure for this outcome? Students written technical report |

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| **Outcome 3** | Type outcome here. What do you want students to think, know, or do when they have completed the course?  Students will communicate effectively in an oral presentation. |
| Which learning activities are responsible for this outcome? | List learning activities.  Students will deliver an oral presentation of their technical paper |
| Assessment Measure | What will be your assessment measure for this outcome? Oral presentation |

*(Repeat if needed for additional outcomes)*

**Bulletin Changes**

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| **Instructions** |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](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. Please include a before (with changed areas highlighted) and after of all affected sections.**  **\*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.** |

This is already mentioned in the new Ph.D. in ECS creation application.

At the end of Page 367 of 2021-2022 Graduate Bulletin:

***ECS 7003. Ph.D. Research Design*** *A focus on the understanding and development of scientific methods as they pertain to quantitative and qualitative research methods appropriate to the study of engineering, computer science, and engineering management (ECS). A review of current research in the field will be conducted. The course culminates in a research proposal for Ph.D. in ECS.**Prerequisites: admission to the Ph.D. program or permission of the professor. Master and specialist level students may enroll in this course with the permission of the professor.*