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

**New or Modified Course Proposal Form**

**[X] Undergraduate Curriculum Council**

**[ ] 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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| Andre Possani Espinosa 9/23/2021**Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**COPE Chair (if applicable)** |
| Andre Possani Espinosa 9/23/2021**Department Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Head of Unit (if applicable)**   |
| Jason Stewart 9/24/2021**College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Undergraduate Curriculum Council Chair** |
| Mary Elizabeth Spence 9/29/2021**Office of Assessment (new courses only)** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Graduate Curriculum Committee Chair** |
| Abhijit Bhattacharyya 9/24/2021**College Dean** | Alan Utter 10/11/2021**Vice Chancellor for Academic Affairs** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**General Education Committee Chair (if applicable)**   |  |

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

Andre Possani Espinosa, apossaniespinosa@astate.edu, +52 419 689 0354 ext. 2061

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

FALL 2022

**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** |  | **ESE** |
| **Number\*** |  | **4013** |
| **Title** |  | **Energy Systems II** |
| **Description\*\*** |  | **Multidisciplinary group work on solving complex engineering problems related to energy systems. Emphasis on the design and improvement of energy systems.** |

 ***\**** (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 as it should appear in the Bulletin.

1. **Proposed prerequisites and major restrictions** **[Modification requested? 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?

C or better in ESE 4003

* 1. Why or why not?

 Requires knowledge of Energy Systems

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

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

Spring

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

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

Standard letter

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

**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?

 Enter text...

1. Yes Is this course in support of a new program?

a. If yes, what program?

 BS in Electrical Systems Engineering, BS in Mechanical Systems Engineering and BS in Industrial Systems Engineering

1. 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)?

a. If yes, which course?

Enter text...

**Course Details**

1. **Proposed outline** **[Modification requested? 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.)

Week 1: Fuel Cells I: Proton Exchange Membrane (PEMFC)

Week 2: Fuel Cells II: Solid Oxide (SOFC)

Week 3: Carbon Capture and Storage

Week 4: Energy Storage I: Mechanical methods

Week 5: Energy Storage II: Electromechanical methods

Week 6: Energy Storage III: Electrical methods

Week 7: Energy Storage IV: Chemical methods

Week 8: Energy Storage V: Thermal methods

Week 9: Energy oracle I: Nuclear fusion

Week 10: Energy oracle II: DC over AC transmission

Week 11: Energy oracle III: Centralized vs decentralized energy generation (smart grids)

Week 12: Energy oracle IV: Smaller renewables for decentralized energy generation

Week 13: Free energy market

Week 14 – 15: Project development

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

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

No

1. **Department staffing and classroom/lab resources**

No

1. Will this require additional faculty, supplies, etc.?

 No

1. 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.*

**Justification**

**Modification Justification (Course Modifications Only)**

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)

 Students will work in multidisciplinary group work on solving complex engineering problems related to energy systems. Emphasis on the design and improvement of energy systems.

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.

 This course contributes to ABET’s student outcome 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

c. Student population served.

All engineering students at ASUCQ

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

Upper level because it requires knowledge from lower-level courses.

**Assessment**

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

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

 *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?

This course is an elective course in the degree plan and won’t be used for direct assessment. This course contributes to PLO 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

1. 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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| **Program-Level Outcome 1 (from question #19)** | An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. |
| Assessment Procedure Criterion | Indirect AssessmentSurveys of graduating seniors (each semester)Surveys of Alumni (every two years)Surveys of Employers (every two years)Direct Assessment90% of ESE students score 3.0 or higher on their portfolio evaluations (graded work, exams, papers, etc.) from the following course:EE 4313 Control Systems Theory |
| Which courses are responsible for this outcome? | EE 4313 Control Systems Theory |
| Assessment Timetable | Collect data whenever EE 4313 is offered. Assess every 3 years according to the College of Engineering and Computer Science assessment schedule. |
| Who is responsible for assessing and reporting on the results? | Indirect assessment: the Director of Engineering at campus Queretaro.Direct assessment: the Professor who teaches EE 4313. |

 *(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** | Student will learn about Energy Systems |
| Which learning activities are responsible for this outcome? | In-class discussion and illustrationsDemonstration of analysis results in presentations |
| Assessment Measure  | Course presentations, exams and projects |

*(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.**  |

**Page 516, before the heading “Finance (FIN)”**

**Before:**

**ES 4843. Practicum/Pre-Internship** Introduction to field experience in exercise science in

order to become familiar with the operational and procedural aspects of clinically based exercise

facilities. Prerequisite, grade of “C” or better in ES 3653, ES 3713, ES 4683, and ES 4693, or

instructor permission. Corequisite, ES 4673. Spring.

**Finance (FIN)**

**FIN 2013. Personal Asset Management** Financial assets as vehicles for saving for the future,

investments in combinations of assets to meet financial objectives, and how the financial objectives

will change over the life span of the investor. Fall, Spring

**After:**

**ES 4843. Practicum/Pre-Internship** Introduction to field experience in exercise science in

order to become familiar with the operational and procedural aspects of clinically based exercise

facilities. Prerequisite, grade of “C” or better in ES 3653, ES 3713, ES 4683, and ES 4693, or

instructor permission. Corequisite, ES 4673. Spring.

**Electrical Systems Engineering (ESE)**

**ESE 4013. Energy Systems II** Multidisciplinary group work on solving complex engineering problems related to energy systems. Emphasis on the design and improvement of energy systems. Prerequisite, C or better in ESE 4003. Spring

**Finance (FIN)**

**FIN 2013. Personal Asset Management** Financial assets as vehicles for saving for the future,

investments in combinations of assets to meet financial objectives, and how the financial objectives

will change over the life span of the investor. Fall, Spring