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| For Academic Affairs and Research Use Only |
| Proposal Number | ECS19 |
| CIP Code:  |  |
| Degree Code: |  |

**New or Modified Course Proposal Form**

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

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| **[ ]New Course, [ ]Experimental Course (1-time offering), or [x]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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| Ilwoo Seok 3/16/2022**Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**COPE Chair (if applicable)** |
| Shivan Haran 3/16/2022**Department Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Head of Unit (if applicable)**   |
| Jason Stewart 3/23/2022**College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Undergraduate Curriculum Council Chair** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Director of Assessment (new courses only)** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Graduate Curriculum Committee Chair** |
| Abhijit Bhattacharyya 3/25/2022**College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Vice Chancellor for Academic Affairs** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**General Education Committee Chair (if applicable)**   |  |

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

**Shivan Haran; sharan@astate.edu; (870) 972-3413**

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

**Fall 2022; 2022-23 Bulletin**

**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** | **ME** | **N/A** |
| **Number\*** | **3504** | **4504** |
| **Title** (include a short title that’s 30 characters or fewer) | **Process Monitoring and Control** |  **N/A** |
| **Description\*\*** | **Theory and application of instrumentation, measurement, and control of engineering systems.** |  **N/A** |

 ***\**** 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? 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?
	1. If yes, which ones?
	2. Why or why not?

Enter text...

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

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

1. **Proposed course type [Modification requested? Yes]**

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 and Lab**

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])

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

a. If yes, what program?

 Enter text...

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.)

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

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

The class can be offered as part of the existing faculty teaching load; sufficient classroom space is available.

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)

This course is a Senior level course offered in the 4th year of the BSME degree program. The earlier course number did not reflect this and hence the request for change to a 4000-level course. As seniors taking this course, the students will be better prepared as well as have an improved understanding of the course material, in addition to being able to do the lab exercises.

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

1. Justification for course. Must include:
2. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)
3. How does the course fit with the mission of the department? If course is mandated by an accrediting or certifying agency, include the directive.
4. Student population served.

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

**Assessment**

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

1. **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?

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.*

 *(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**  | Upon completion of the course, students would have learnt fundamental concepts in designing an experiments; setting up of a system for data acquisition and analysis; use of LabVIEW for signal processing and analysis |
| Which learning activities are responsible for this outcome? | In-class discussion and hands-on Lab projectsDemonstration of experimental set-ups and their workings |
| Assessment Measure  | Exams, lab reports and demonstration |

*(Repeat if needed for additional outcomes)*

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| **Outcome 2**  | Upon completion of the course, students would have understood the methodology and role of design of experiments for practical applications |
| Which learning activities are responsible for this outcome? | Design of an experiment which may be in a thermal or vibration or a related area of application, Demonstration of the experiment including set-up and analysis of results; presentation of a final report |
| Assessment Measure  | Exams, lab reports and demonstration |

**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.**  |

**Bulletin in Page 209**

***Before***

ME 2502, Solid Modeling for Mechanical Engineers 2
ME 3504, Process Monitoring and Control 4
ME 3513, Mechanical Vibrations 3
ME 3533, Engineering Thermodynamics II 3
ME 3613, Control Systems for Mechanical Engineers 3
ME 4503, Fluid and Thermal Energy Systems 3
ME 4543, Machine Design 3

***After***

ME 2502, Solid Modeling for Mechanical Engineers 2
~~ME 3504, Process Monitoring and Control 4~~ME 3513, Mechanical Vibrations 3
ME 3533, Engineering Thermodynamics II 3
ME 3613, Control Systems for Mechanical Engineers 3
ME 4503, Fluid and Thermal Energy Systems 3
***ME 4504, Process Monitoring and Control 4***ME 4543, Machine Design 3

**Bulletin in Page 214**

***Before***

EE 4313, Control Systems Theory 3
MATH 3243, Linear Algebra 3
ME 3504, Process Monitoring and Control 4
ME 3613, Control Systems for Mechanical Engineering 3

***After***

EE 4313, Control Systems Theory 3
MATH 3243, Linear Algebra 3
~~ME 3504, Process Monitoring and Control 4~~

ME 3613, Control Systems for Mechanical Engineering 3

***ME 4504, Process Monitoring and Control 4***

**Bulletin in Page 546**

***Before***

**ME 2502. Solid Modeling for Mechanical Engineers** An introduction to solid modeling and computer aided drafting, CAD, for mechanical engineers. Three dimensional models of mechanical components are virtually constructed using appropriate software tools. Fall, Spring.

**ME 3504. Process Monitoring and Control** Theory and application of instrumentation, measurement, and control of engineering systems. Prerequisites, C or better in MATH 4403, ENGR 2423 and ENGR 3443. Fall.

**ME 3513. Mechanical Vibrations** Kinematics of harmonic and nonharmonic vibrations, systems of one and several degrees of freedom, free and forced vibrations, self excited vibrations. Prerequisites, C or better in MATH 4403 and ENGR 3423. Spring.

***After***

**ME 2502. Solid Modeling for Mechanical Engineers** An introduction to solid modeling and computer aided drafting, CAD, for mechanical engineers. Three dimensional models of mechanical components are virtually constructed using appropriate software tools. Fall, Spring.

**~~ME 3504. Process Monitoring and Control~~** ~~Theory and application of instrumentation, measurement, and control of engineering systems. Prerequisites, C or better in MATH 4403, ENGR 2423 and ENGR 3443. Fall.~~

**ME 3513. Mechanical Vibrations** Kinematics of harmonic and nonharmonic vibrations, systems of one and several degrees of freedom, free and forced vibrations, self excited vibrations. Prerequisites, C or better in MATH 4403 and ENGR 3423. Spring.

**Bulletin in Page 547**

***Before***

**ME 4503. Fluid and Thermal Energy Systems** Analysis and design of components, systems, and processes using the fundamentals presented in Thermodynamics, Fluid Mechanics, and Heat Transfer. Prerequisites, C or better in ME 3533 and ME 4553. Dual listed as ME 5503. Fall.

**ME 4523. Introduction to Finite Element Analysis** Theory and application of energy concepts and structural mechanics required for the development of finite element methods are presented. Applications to beams, trusses, torsion, etc. are presented. Prerequisites, C or better in ENGR 2413. Dual listed as ME 5523. Spring.

**ME 4543. Machine Design** Analysis and design of mechanical system components using theoretical and empirical concepts coupled with computational modeling and numerical analysis. Prerequisites, C or better in ENGR 2413. Dual listed as ME 5543. Fall.

***After***

**ME 4503. Fluid and Thermal Energy Systems** Analysis and design of components, systems, and processes using the fundamentals presented in Thermodynamics, Fluid Mechanics, and Heat Transfer. Prerequisites, C or better in ME 3533 and ME 4553. Dual listed as ME 5503. Fall.

***ME 4504. Process Monitoring and Control*** *Theory and application of instrumentation, measurement, and control of engineering systems. Prerequisites, C or better in ENGR 2423, ENGR 3443, and MATH 4403. Fall.*

**ME 4523. Introduction to Finite Element Analysis** Theory and application of energy concepts and structural mechanics required for the development of finite element methods are presented. Applications to beams, trusses, torsion, etc. are presented. Prerequisites, C or better in ENGR 2413. Dual listed as ME 5523. Spring.

**ME 4543. Machine Design** Analysis and design of mechanical system components using theoretical and empirical concepts coupled with computational modeling and numerical analysis. Prerequisites, C or better in ENGR 2413. Dual listed as ME 5543. Fall.

**Bulletin in Page 547**

***Before***

**ME 4593. Design of Heating, Ventilating, and Air-Conditioning Systems** Design of HVAC systems to modify environmental conditions. Prerequisites, C or better in ME 3533 and ME 4553. Dual listed as ME 5593. Spring.

**ME 4613. Introduction to Mechatronics** With an emphasis on modeling, the course focuses on the performance characteristics and application of microprocessors, analog and digital electronics, and modern mechatronic systems and intelligent manufacturing, particularly smart sensors, controllers, and actuators. Prerequisite, C or better in MATH 4403. Corequisite, ME 3504. Dual listed as ME 5613. Fall.

**ME 469V. Special Problems in Mechanical Engineering** Individually directed problems in mechanical engineering for juniors and seniors. A course outline and project summary listing the goals and expected outcomes must be approved by the student advisor and the program director. Prerequisites are dependent on the nature of the special problem. Irregular.

***After***

**ME 4593. Design of Heating, Ventilating, and Air-Conditioning Systems** Design of HVAC systems to modify environmental conditions. Prerequisites, C or better in ME 3533 and ME 4553. Dual listed as ME 5593. Spring.

**ME 4613. Introduction to Mechatronics** With an emphasis on modeling, the course focuses on the performance characteristics and application of microprocessors, analog and digital electronics, and modern mechatronic systems and intelligent manufacturing, particularly smart sensors, controllers, and actuators. Prerequisite, C or better in MATH 4403. Corequisite, ***ME 4504***. Dual listed as ME 5613. Fall.

**ME 469V. Special Problems in Mechanical Engineering** Individually directed problems in mechanical engineering for juniors and seniors. A course outline and project summary listing the goals and expected outcomes must be approved by the student advisor and the program director. Prerequisites are dependent on the nature of the special problem. Irregular.