

B - Course Revision Form V. 7.2022 : Entry # 2246**DEAN Decision**

Approved

Today's Date

08/20/2022

DEAN Comments

The original course was fine and consistent with content delivered in other programs. The suggested changes are also OK and align with other changes made by the department to ensure that the students see content to an appropriate depth and are exposed to an appropriate degree of breath to satisfy accreditation requirements..

EPC Decision

Approved

Today's Date

11/10/2022

SCHOOL EPC Comments

Approved with 2 yes, 0 no, 1 abstention (McCullough recused herself due to being the submitter of the proposal).

Begin Form**Today's Date**

09/09/2022

Your Name

Claire McCullough

Your Email:cmccullo@highpoint.edu**Are you a Department Chair?**

Yes

By checking below I am certifying that my department chair has seen and approved the course revisions that are in this proposal

Yes

Please select the appropriate school overseeing this proposal:

Engineering

Which semester is this course to be taught as proposed?

Fall 2023

B - Course Revision Form V. 7.2022 : Entry # 2246**Is this course part of GoGlobal?**

No

Does this course, as revised, include any community engagement?

No

Is this a revision to meet new Gen Ed requirements?

No

Are you submitting multiple courses for revision from the same department?

No, just one

Does this course as it currently exists fulfill any of the below University academic program requirements?

- This course does not currently fulfill academic program requirements

What would you like to revise?

- Learning Outcomes

Are you also revising any of the following for this course?

- Change course title
- Change course description

Does this course count towards a major or a minor?

Yes

Please list the course(s) and whether they are required or electives for the major/minor.**Course Prefix/Number****Name of Major and/or Minor?****Required or Elective?**

ECE 4510

Electrical Engineering and Computer Engineering Required

Is this course cross listed?

No

Choose the department designator for your course from the list below.

ECE

Current course number

4510

Current course title

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Advanced Control Systems

Revisions to course number, title, credits, prerequisites**What are the changes to the course title?**

Title should be "Control Systems" rather than "Advanced Control Systems"

Please paste the existing catalog description

Analysis of linear control systems using classical and modern control theories. Plant representation, closed loop system representation, time response, frequency response, concept of stability, and root locus method. Computer modeling and simulation of feedback systems. Modeling nonlinear systems. Use of modeling software to design nonlinear control systems. Intuitive control strategies. Fuzzy control, computer and hardware implementation of fuzzy controllers, adaptive fuzzy control.

Enter the proposed NEW course description

Analysis of linear control systems using classical and modern control theories. Plant representation, closed loop system representation, time response, frequency response, concept of stability, and root locus method. Design of feedback control systems and state space systems. Computer modeling and simulation of feedback systems. Intuitive control strategies.

Please list the changes to the prerequisites and the rationale for the change

Current pre-requisites are ECE 2610 and ECE 3140.

Proposed pre-requisites are ECE 3105 Signals and Systems, and ECE 3610 Circuits II.

The circuit material in 2610 does not use Laplace and other frequency domain techniques, and so is not an adequate preparation for the material in Controls; ECE 3610 is much more relevant and will better prepare students for success. The advanced mathematical techniques in ECE 3105 are also necessary. ECE 3140 as originally approved was not suitable for engineering majors and was previously removed from the curriculum.

Curriculum Review Information**Please list the revised student learning outcomes for this course****COURSE OUTCOMES**

1. Demonstrate the ability to apply knowledge of differential equations, complex variables and linear algebra.
2. Demonstrate an ability to design various closed-loop control systems to meet desired needs using classical and state space methods
3. Demonstrate the ability to identify, formulate, and solve system-level engineering problems.
4. Demonstrate an ability to compute complex arithmetic, frequency responses, and perform parametric studies using modern engineering tools such as MATLAB and Simulink through design and analysis projects.

ABET OUTCOMES/ REQUIREMENTS (Criterion 3)

Outcome 1: ability to identify, formulate and solve complex engineering problem

Outcome 2: an ability to apply engineering design to produce solutions that meet specified needs

Outcome 3: ability to communicate effectively with a range of audiences

Outcome 6: ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.

Outcome 7: ability to acquire and apply new knowledge as needed...

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If you would like to specify any revisions to requirements for how contact hours must be met for all sections of this course, please indicate below (e.g., if any experiential learning activities will replace seat time)

The course will include 3 hours of class time and 3 of laboratory experience.

Is there anything else the reviewing parties should know about this course revision proposal that hasn't already been asked/addressed?

The course as originally approved does not meet engineering community standards for what a controls class would contain to prepare students for professional practice. Also, the precursor course was removed from the curriculum as it was not suited to engineering majors; thus some of the preliminary material had to be included in this course as revised.

Sample Syllabus

- [ECE-4510-Advanced-Control-Systems-REVISION-fall-2022.docx](#)