

EEE 146: POWER ELECTRONICS

In Workflow

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Approval Path

1. Fri, 09 Apr 2021 22:32:53 GMT
Perry Heedley (pheedley): Approved for EEE Committee Chair
2. Sat, 08 May 2021 00:54:07 GMT
Mahyar Zarghami (mahyar.zarghami): Approved for EEE Chair
3. Fri, 17 Sep 2021 17:21:10 GMT
Mohammed Eltayeb (mohammed.eltayeb): Approved for ECS College Committee Chair
4. Fri, 17 Sep 2021 17:36:54 GMT
Behnam Arad (arad): Approved for ECS Dean

Date Submitted: Fri, 09 Apr 2021 22:32:30 GMT

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Changes proposed by: Mahyar Zarghami (214200923)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
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Catalog Title:

Power Electronics

Class Schedule Title:

Power Electronics

Academic Group: (College)

ECS - Engineering & Computer Science

Academic Organization: (Department)

Electrical and Electronic Engineering

Will this course be offered through the College of Continuing Education (CCE)?

No

Catalog Year Effective:

Fall 2022 (2022/2023 Catalog)

Subject Area: (prefix)

EEE - Electrical and Electronic Engineering

Catalog Number: (course number)

146

Course ID: (For administrative use only.)

126941

Units:

3

In what term(s) will this course typically be offered?

Fall, Spring

Does this course require a room for its final exam?

Yes, final exam requires a room

Does this course replace an existing experimental course?

No

This course complies with the credit hour policy:

Yes

Justification for course proposal:

We propose to update course description and materials to better serve BS EEE students. As an introductory course in Power Electronics, more emphasis has been placed on power conversion and less on controlling electric drives. Based on the proposed modifications, EEE 130 is no longer required as a prerequisite of the course. Instead, we propose to make EEE 108 a prerequisite, since knowledge of the fundamentals of electronics covered in EEE 108 provides students with sufficient materials for this course.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)

Introduction to solid state device applications in power control. Modeling and review of thyristors, controlled rectifiers, DC-DC converters, and DC to AC inverters. Brief introduction to control of DC drives. Strong design emphasis. Control of power electronics systems, UPS systems, power supplies.

Are one or more field trips required with this course?

No

Fee Course?

No

Is this course designated as Service Learning?

No

Does this course require safety training?

No

Does this course require personal protective equipment (PPE)?

No

Does this course have prerequisites?

Yes

Prerequisite:

EEE 108.

Prerequisites Enforced at Registration?

Yes

Does this course have corequisites?

No

Graded:

Letter

Approval required for enrollment?

No Approval Required

Course Component(s) and Classification(s):

Discussion

Discussion Classification

CS#04 - Lecture /Recitation (K-factor=1 WTU per unit)

Discussion Units

3

Is this a paired course?

No

Is this course crosslisted?

No

Can this course be repeated for credit?

No

Can the course be taken for credit more than once during the same term?

No

Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc."

After successfully completing this course, the student will be able to

1. Identify the components and operation of switch mode circuits.
2. Analyze the transient behavior, and steady state operation of circuits in either continuous or discontinuous current modes.
3. Design power electronic systems as rectifiers, DC-DC converters, and inverters.
4. Simulate and control power electronic devices with contemporary simulation and computing tools.

Attach a list of the required/recommended course readings and activities:

EEE 146 Course Outline_ABET - Schedule_2021_02_28.docx

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.

Homework assignments, to assess ELOs 1 through 4.

In-class quizzes, to assess ELOs 1 through 3.

Projects, to assess ELOs 1 through 4.

Exams, to assess ELOs 1 through 3.

Is this course required in a degree program (major, minor, graduate degree, certificate?)

No

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?

No

Will there be any departments affected by this proposed course?

No

I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.

I/we agree

University Learning Goals**Undergraduate Learning Goals:**

Competence in the disciplines

Integrative learning

Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

GE Course and GE Goal(s)**Is this a General Education (GE) course or is it being considered for GE?**

No

Key: 1693