EEE 130: ELECTROMECHANICAL CONVERSION

In Workflow

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Approval Path

1. Fri, 09 Apr 2021 22:31:57 GMT
   Perry Heedley (pheedley): Approved for EEE Committee Chair
2. Sat, 08 May 2021 00:53:22 GMT
   Mahyar Zarghami (mahyar.zarghami): Approved for EEE Chair
3. Fri, 03 Sep 2021 18:58:12 GMT
   Gareth Figgess (figgess): Rollback to Initiator
4. Fri, 10 Sep 2021 22:26:13 GMT
   Perry Heedley (pheedley): Approved for EEE Committee Chair
5. Fri, 10 Sep 2021 22:39:36 GMT
   Mahyar Zarghami (mahyar.zarghami): Approved for EEE Chair
6. Fri, 17 Sep 2021 17:20:44 GMT
   Mohammed Eltayeb (mohammed.eltayeb): Approved for ECS College Committee Chair
7. Fri, 17 Sep 2021 17:36:23 GMT
   Behnam Arad (arad): Approved for ECS Dean

Date Submitted: Fri, 10 Sep 2021 22:25:06 GMT

Viewing: EEE 130 : Electromechanical Conversion

Last edit: Fri, 10 Sep 2021 22:25:05 GMT

Changes proposed by: Mahyar Zarghami (214200923)

Contact(s):

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

Class Schedule Title:
Electromechanical Conversion

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)
130

Course ID: (For administrative use only.)
126876

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:
The main change in EEE 130 is to make it an elective course instead of a required course in the BS EEE program, plus adding an introduction to power electronic drives to the course, since application of power electronic drives in operation and control of electric machinery has become prevalent.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)
Magnetic circuits and principles of electromechanical energy conversion, Transformers, Rotating Magnetic Fields, Asynchronous AC machines, Synchronous AC machines, DC machines, Introduction to special machines, Introduction to power electronic drives.

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 117 and EEE 161

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 completion of this course, students will be able to:
1. Apply fundamental equations in stationary and rotating magnetically coupled circuits and analyze and interpret formation of force and torque based on laws of electromechanical energy conversion.
2. Analyze models and operation of single-phase and three-phase power transformers.
3. Analyze models and operation of AC machines, including three-phase asynchronous and synchronous machines, and single-phase special purpose motors.
4. Analyze models and operation of DC machines.
5. Explain the role of power electronic drives and their application in operation and control of electric machines.

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

EEE 130 Course Syllabus Outline_ABET - Schedule.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.

Assignment 1: Magnetic Circuits, ELO 1
Assignment 2: Transformers, ELO 2
Assignment 3: Energy Conversion, ELO 1
Assignment 4: Induction Machines, ELO 3
Assignment 5: Synchronous Machines, ELO 3
Assignment 6: DC Machines, ELO 4

Quiz 1: Magnetic Circuits, ELO 1
Quiz 2: Transformers, ELO 2
Quiz 3: Energy Conversion, ELO 1
Quiz 4: Induction Machines, ELO 3
Quiz 5: Synchronous Machines, ELO 3
Quiz 6: DC Machines, ELO 4
Quiz 7: Special Motors, ELO 3
Quiz 8: Power Electronic Drives, ELO 5

One Group Project on ELO 3 or ELO 4

Test 1: ELOs 1 and 2
Test 2: ELO 3
Test 3: ELOs 4 and 5

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?

Yes

Indicate which department(s) will be affected by the proposed course:

Department(s)
Physics

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

Please attach any additional files not requested above:

CommunicationWithPhysics_Changes to the BS EEE Program .pdf

Reviewer Comments:

Gareth Figgess (figgess) (Fri, 03 Sep 2021 18:58:12 GMT): Rollback: Per Mahyar's request

Key: 1684