EEE 136: SMART ELECTRIC POWER GRID

In Workflow

1. EEE Committee Chair (pheedley@csus.edu)
2. EEE Chair (mahyar.zarghami@csus.edu)
3. ECS College Committee Chair (mohammed.eltayeb@csus.edu)
4. ECS Dean (arad@csus.edu)
5. Academic Services (torsetj@csus.edu; cnewsome@skymail.csus.edu)
6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Dean of Undergraduate (james.german@csus.edu; celena.showers@csus.edu)
8. Dean of Graduate (cnewsome@skymail.csus.edu)
9. Catalog Editor (torsetj@csus.edu)
10. Registrar's Office (wlindsey@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

Approval Path

1. Fri, 09 Apr 2021 22:34:33 GMT
   Perry Heedley (pheedley): Approved for EEE Committee Chair
2. Sat, 08 May 2021 00:53:49 GMT
   Mahyar Zarghami (mahyar.zarghami): Approved for EEE Chair
3. Fri, 17 Sep 2021 17:20:52 GMT
   Mohammed Eltayeb (mohammed.eltayeb): Approved for ECS College Committee Chair
4. Fri, 17 Sep 2021 17:36:34 GMT
   Behnam Arad (arad): Approved for ECS Dean

Date Submitted: Fri, 09 Apr 2021 22:34:14 GMT

Viewing: EEE 136 : Smart Electric Power Grid

Last edit: Sat, 24 Apr 2021 01:34:59 GMT

Changes proposed by: Tracy Toups (218655646)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Tracy Toups	toups@csus.edu	916-279-6568

Catalog Title:
Smart Electric Power Grid

Class Schedule Title:
Smart Electric Power Grid

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)
136

Course ID: (For administrative use only.)
201298

Units:
3

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

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 major change is to remove EEE 142 or EEE 144 as corequisites of the course, and to add EEE 141 as the prerequisite.

The EEE department is changing an upper division course for the EEE major requirement through a Form B. (EEE141 is now a major requirement while EEE130 is now an elective). Other electives related to the power area for EEE department should be looked into for possible changes as well.

This course introduces new technology briefly to the students to enhance the control and efficiency of the power system. The first half of this smart grid course relates to introducing various new technologies to the students. The second half is the implementation of said technologies, understanding of fundamental power systems as a whole and its components, but not the advanced topics of EEE142. Since the focus of the course is on the technologies and how they match with the power system components, EEE141 is sufficient as a prerequisite.

Thus, the pre-requisite of EEE142 is not needed as the topics covered in EEE141 is sufficient enough for the student.

It is to note, EEE144's extensive knowledge is not needed as EEE141 sufficiently covers the information. Thus, we can remove the EEE144 pre-requisite requirement as well.

Overall, the course content will not change, only the pre-requisites will change.
The new pre-requisite will be: EEE141.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)
Smart grid to enhance reliability, security, robustness and efficiency of transmission and distribution systems. Integration of renewable energy sources and distributed generation. Energy storage systems. Advanced metering infrastructure, home-area networks, micro-grids, real-time pricing, plug-in hybrid vehicles, demand response, load curve sharing. Control, monitoring and protection grid; SCADA systems. Voltage and load frequency control to ensure balance. Enabling active participation of consumer. Anticipating and responding to system disturbance in self healing manner. Providing power quality for digital systems needs.

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:
EEE141.

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):
Lecture

Lecture Classification
CS#02 - Lecture/Discussion (K-factor=1WTU per unit)
Lecture 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."
1) Evaluating various new technologies related to smart grid integration
2) Integrating various new technologies into the existing power grid.
3) Assessing the performance and outcome of the new smart gird implementation plan.

Attach a list of the required/recommended course readings and activities:
EEE136 syllabus 2021.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.
Quizzes assessing ELOs 1 and 2.
Exams assessing ELOs 1 and 2.
Research presentation assessing ELOs 2 and 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

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: 1687