ME 129: POWER PLANT ENGINEERING

In Workflow

1. ME Committee Chair (akuma@csus.edu)
2. ME Chair (akuma@csus.edu)
3. ECS College Committee Chair (troy.topping@csus.edu)
4. ECS Dean (kevan@csus.edu)
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6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Dean of Undergraduate (james.german@csus.edu;%20celena.showers@csus.edu)
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11. PeopleSoft (PeopleSoft@csus.edu)

Approval Path

1. Wed, 17 Apr 2019 19:57:12 GMT
   Akihiko Kumagai (akuma): Rollback to Initiator
2. Fri, 19 Apr 2019 18:15:51 GMT
   Akihiko Kumagai (akuma): Rollback to Initiator
3. Fri, 19 Apr 2019 19:39:04 GMT
   Akihiko Kumagai (akuma): Approved for ME Committee Chair
4. Fri, 19 Apr 2019 19:39:45 GMT
   Akihiko Kumagai (akuma): Approved for ME Chair
5. Fri, 03 May 2019 17:42:05 GMT
   Troy Topping (troy.topping): Rollback to Initiator
6. Thu, 10 Oct 2019 23:24:09 GMT
   Akihiko Kumagai (akuma): Approved for ME Committee Chair
7. Thu, 10 Oct 2019 23:26:34 GMT
   Akihiko Kumagai (akuma): Approved for ME Chair
8. Fri, 11 Oct 2019 17:16:23 GMT
   Troy Topping (troy.topping): Approved for ECS College Committee Chair
9. Fri, 25 Oct 2019 16:56:28 GMT
   Kevan Shafizadeh (kevan): Approved for ECS Dean

New Course Proposal

Date Submitted:Mon, 23 Sep 2019 02:23:11 GMT

Viewing:ME 129 : Power Plant Engineering

Last edit:Mon, 23 Sep 2019 02:23:10 GMT

Changes proposed by: Farshid Zabihian (219191571)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Farshid Zabihian	farshid.zabihian@csus.edu	(916) 278-6222

Catalog Title:
Power Plant Engineering

Class Schedule Title:
Power Plant Engineering

Academic Group: (College)
ECS - Engineering & Computer Science

Academic Organization: (Department)
Mechanical Engineering

Will this course be offered through the College of Continuing Education (CCE)?
No

Catalog Year Effective:
Fall 2019 (2019/2020 Catalog)

Subject Area: (prefix)
ME - Mechanical Engineering

Catalog Number: (course number)
129

Course ID: (For administrative use only.)
TBD

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?
Yes

This course replaces the following experimental course:
ME 196G Power Plant Design - Course ME 196G Power Plant Design not Found

This course complies with the credit hour policy:
Yes

Justification for course proposal:
The experimental elective course ME196G, which the proposed course will replace, was offered in Spring 17, 18, and 19 with relative success. Currently 17 students are taking the course.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)
In this course, the students will be able to understand the fundamentals of power industry, including electricity production, transmission, and distribution. They will also apply their engineering knowledge gained in the fundamental courses to understand and conceptually design various modern power plant technologies for electric power generation and cogeneration, including steam power plants, gas turbines, combined cycles, and nuclear power plants and their components.

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:
Thermodynamics (ENGR 124) and Thermal-Fluid Systems (ME 128). ME 128 may be taken concurrently

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. Interpret current power production and consumption trends in the world, the U.S.A., and California and relate them to the past and future
2. Locate and evaluate regional and global power related data
3. Assess electricity demand and evaluate its impacts on electricity production
4. Identify types of power plants and compare their characteristics
5. Articulate steam power plants, their components, and historical importance
6. Explain and conceptually design steam generators
7. Calculate combustion process and describe various fuel types and properties, their preparation and combustion systems, and pollution control equipment
8. Calculate steam turbine blades and explain associated components
9. Conceptually design condensers and feedwater systems
10. Conceptually design circulating water system
11. Describe gas turbines and their components
12. Explain cogeneration and combined cycle power plants
13. Describe nuclear power plants and their components

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, Quizzes, and projects (ELOs 1-13)
Class Tests (ELOs 1-13)
Final Comprehensive Exam (ELOs 1-13)

For whom is this course being developed?

Majors in the Dept

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
Knowledge of human cultures and the physical and natural world

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:

Course Outline S2019-Power Plant Engineering.pdf

Reviewer Comments:

Farshid Zabihian (farshid.zabihian) (Wed, 13 Mar 2019 17:39:37 GMT):I numbered the expected learning outcomes as follows: After successful completion of this course the students will be able to 1. Describe current power production and consumption trends in the world, the U.S.A., and California and relate them to the past and future 2. Find and evaluate reginal and global power related data 3. Explain electricity demand and evaluate its impacts on electricity production 4. Describe types of power plants and their characteristics 5. Explain steam power plants, their components, and historical importance 6. Explain and conceptually design steam generators 7. Describe various fuel types and properties, their preparation and combustion systems, and pollution control equipment 8. Explain and conceptually design steam turbines 9. Explain and conceptually design condensers and feedwater systems 10. Explain and conceptually design circulating water system 11. Explain and conceptually design gas turbines 12. Explain and conceptually design combined cycle power plants 13. Explain nuclear power plants Also I added ELOs to the course evaluation: Homework, Quizzes, and projects (ELOs 1-9) Class Tests (ELOs 1-9) Final Comprehensive Exam (ELOs 1-9)
Akihiko Kumagai (akuma) (Wed, 17 Apr 2019 19:57:12 GMT): Rollback: updates needed
Akihiko Kumagai (akuma) (Fri, 19 Apr 2019 18:15:51 GMT): Rollback: Please revise as we discussed at the dept. meeting.
Troy Topping (troy.topping) (Fri, 03 May 2019 17:42:05 GMT): Rollback: Please attend the AC meeting next fall to explain the course proposal.

Key: 13932