Course Name:AC Circuits
Course Prefix: EET
Course Number: 2010
             Submitted by (Name & E-Mail):  Julanne McCulley, jmcculley@weber.edu

Current Date:  11/11/2013
College: Applied Science & Technology
Department:   Engineering Technology
From Term: Fall  2010

Substantive

|  |  |
| --- | --- |
| new  | Current Course Subject N/ACurrent Course Number |

**New/Revised Course Information:**

|  |  |
| --- | --- |
| Subject:  EET            Course Number: 2010 | Check all that apply: *This is for courses already approved for gen ed.    Use a*[*different form*](http://documents.weber.edu/catalog/forms.htm)*for proposing a new gen ed designation.*DV  CA  HU  LS  PS  SS EN  AI  QL  TA  TB  TC  TD  TE |

Course Title: AC Circuits

Abbreviated Course Title:

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| --- | --- |
| Course Type:  | LEL |

Credit Hours:  3  **or** if variable hours:    to

Contact Hours: Lecture 2  Lab 2   Other

Repeat Information:  Limit 0   Max Hrs 0

Grading Mode:  standard

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| --- | --- |
| This course is/will be: | a required course in a major programa required course in a minor programa required course in a 1- or 2- year programelective |

Prerequisites/Co-requisites:

EET 1140 and credit for MATH 1060 or MATH 1080.

Course description (exactly as it will appear in the catalog, including prerequisites):

The course serves as an extension of circuit analysis methods taught in EET 1140 to AC networks. The introduction of complex numbers and phasor notation at the beginning of the course is followed by AC circuit analysis techniques and the determination of the frequency response for passive AC networks. The course is a combination of lecture and laboratory formats. Laboratory activities will include the design, computer simulation, validation and analysis of passive AC networks.

**Justification**for the new course or for changes to an existing course. (Note: Justification should emphasize academic rationale for the change or new course. This is particularly important for courses requesting upper-division status.)

The EET 1140 AC and DC Circuits course has an excess amount of material to cover effectively in one semester with an aggressive schedule. Students are rushed through the material and we are finding through assessment in subsequent courses that retention levels are low in AC and DC fundamentals as well as circuit analysis. Additionally, student lab skills are proving insufficient.

Course content on AC Circuits will be split out of the current EET 1140 course and supplemented with course content on Decibels, Filters, Bode Plots, and AC System Analysis. Purposeful labs will be added to the course to strengthen aptitude in AC circuits along with computer simulation software assignments in Matlab and Multisim.

The Electronics Engineering Technology program is accredited by the Technology Accreditation Commission of ABET, http://www.abet.org.

**INFORMATION PAGE**for substantive proposals only

1. Did this course receive unanimous approval within the Department?

true

If not, what are the major concerns raised by the opponents?

2. If this is a new course proposal, could you achieve the desired results by revising an existing course within your department or by requiring an existing course in another department?

Revising the existing AC/DC course is not possible due to the amount of credit hours required by adding supplemental materials, labs, and computer simulations.

3. How will the proposed course differ from similar offerings by other departments? Comment on any subject overlap between this course and topics generally taught by other departments, even if no similar courses are currently offered by the other departments. Explain any effects that this proposal will have on program requirements or enrollments in other department. Please forward letters (email communication is sufficient) from all departments that you have identified above stating their support or opposition to the proposed course.

The original EET 1140 AC and DC Circuits course will be split out into two courses to cover DC Circuits in EET 1140 and AC Circuits in EET 2010. Additional material will be added to the AC Circuits course along with labs and computer simulations.

4. Is this course required for certification/accreditation of a program?

yes

If so, a statement to that effect should appear in the justification and supporting documents should accompany this form.

5. **For course proposals**, e-mail a syllabus to Faculty Senate which should be sufficiently detailed that the committees can determine that the course is at the appropriate level and matches the description.**There should be an indication of the amount and type of outside activity required in the course (projects, research papers, homework, etc.)**.

**EET 2010 AC Circuits**

**Course: EET 2010** – CRN #20015

**Credit Hours:** 4 – Lecture and lab combination

**Instructor:** Dr. Christian Hearn

**Office:**  ET 214 D

**Phone:**  (801) 626-6371

**Email:** christianhearn@weber.edu

**Office Hours:** 2:00-4:00 M-Th (Friday by apt.)

**Meeting Time:** 10:30-12:20 M, W

**Text**: *Introductory Circuit Analysis* -12th ed., R.L. Boylestad (ISBN 978-0-13-714666-6)

**Software:** MultiSim, MatLab

**Prerequisite:** CEET 1140 DC Circuits

**Course Overview:**

The course serves as an extension of circuit analysis methods taught in EET 1140 to AC networks. The introduction of complex numbers and phasor notation at the beginning of the course is followed by AC circuit analysis techniques and the determination of the frequency response for passive AC networks.

The four hour course is a combination of lecture and laboratory formats. Laboratory activities will include the design, computer simulation, validation and analysis of passive AC networks. EET 2010 is a required course and considered one of the technical curriculum components in the degree program.

**Student Outcomes:** Students will demonstrate and understand

1. Proficiency in the use of complex numbers and phasor notation utilized in circuit analysis.
2. An understanding of the duality between DC and AC circuit analysis methods.
3. The ability to design, build, and analyze passive AC networks in the time and frequency domains.
4. The ability to use diagnostic test equipment

**Topic Outline:**

1. Sinusoidal Alternating Waveforms
2. Phasors and Complex Notation
3. Series and Parallel AC circuits
4. Series-Parallel AC networks
5. Analysis Methods for AC networks
6. AC Network Theorums
7. Introduction to AC power
8. Resonance in passive AC networks
9. Decibels, Filters, and Frequency Response
10. Pulse Waveforms for Series RC and Series RL circuits

**Grading:** Homework 20%

 Quiz 20%

 Mid-Term 20%

 Final 20%

 Laboratory 20%

**Homework:**

Homework is required and will be due at the beginning of the class period. Homework for the following week will be assigned at the end of each lecture. Homework must be neatly organized and submitted on engineering paper. Late homework (after 1 week at a 10% penalty) or homework that does not follow the instructed format will not be accepted.

**Laboratory Experiments**

A laboratory experiment will be scheduled each week. A submitted report should show and include original work completed during the experiment. You will be expected to honestly report measured data. If the results are unexpected, the report should attempt to explain the results.

You will need to spend time troubleshooting circuits, and in your report, include a section that explains what you did and what you learned. Include and show any calculations. Please include a conclusion section that ties the experiment and concept(s) together. Lab reports will be required for each lab. The first two weeks are dedicated to building and debugging your trainer.

A good test of your report is to ask a friend to read it. Another person should have enough information from the report to duplicate your work. **Lab reports will be due at the start of the class meeting the following week.**

**Policies:**

**Special Needs:** If you require accommodations or services due to a disability, you must contact Services for Students with Disabilities (SSD) in the Student Service Center (Room 181, Tel:626-6413) at the **beginning** of the semester.

No cell phones during lecture or lab. (‘**Off**’ is good practice, ‘**Manner Mode**’ if necessary)

Attendance is extremely important. If you miss class, it is **your** responsibility to obtain notes and assignments from your colleagues. Anyone missing more than 3 class periods without instructor notification (prior, or during if emergency) will receive a department drop.

All students are expected to abide by the Student Code:

<http://www.weber.edu/ppm/Policies/6-22_StudentCode.html>

**Rights/Responsibilities:**

The syllabus is the governing document for **CEET 2110**. The decision made by the student to enroll and attend the course for the semester amounts to tacit consent to the terms of the syllabus.

Please review the WSU Policies and Procedures Manual student code regarding ethics (<http://documents.weber.edu/ppm/6-22.html>, specifically section IV. Academic dishonesty, as described will not be tolerated. Consequences may vary from grade adjustment to expulsion from the university.

**\*\*Note:** The instructor reserves the right to make amendments to the schedule as necessary.