Stephen F. Austin State University

EGR 475 – Special Problems (Elective)

Course Description:
Experimental and theoretical independent study in research. Not available for graduate credit.
Prerequisite: 12 semester hours of engineering or physics. 3 credit hours.

Prerequisites: 12 semester hours of engineering or physics

Co-Requisites: None

Credits: 3 Hours (Lecture: 3 Hours)

Instructor: Christopher J. Aul

Textbook: None

Supplemental Materials: None

Topics Covered:
Engineering design, project planning, CAD, dimensioning and tolerances, fabrication methods, experimental testing, reporting of technical information.

Course Learning Outcomes
By the end of the course, a successful student will be able to:
1. Design an appropriate solution to the prescribed work. (SO-c)
2. Apply principles in engineering design to evaluate concept and final design. (SO-e)
3. Reference up-to-date engineering designs developed for similar applications. (SO-j)
4. Describe overall design choices in a comprehensive written report. (SO-g)
5. Test the experimental design and record results against requirements of project. (SO-b)

Student Outcomes
Graduates of the program will:
(a) an ability to apply knowledge of mathematics, science and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
(d) an ability to function on multidisciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
Course Outline:
Engineering 475 – Fall 2016
Special Problems
Department of Physics and Astronomy, Stephen F. Austin State University

Instructor: Christopher J. Aul, PhD
Email: aulcj@sfasu.edu
Office: 207D Ed & Gwen Cole STEM Building
Phone: 936-468-1512
Office Hours: MW 8-11am, TR 10-11am, or by appointment
Class Meetings: Wednesdays 1-2pm
Course Home Page: http://d2l.sfasu.edu

Course Description:
Experimental and theoretical independent study in research. Not available for graduate credit.
Prerequisite: 12 semester hours of engineering or physics. 3 credit hours.

Text and Materials:
The materials for this course will be available online in the form of datasheets. Equipment is available in the electronics lab.

Course Requirements:
Reporting on the design work will be required of the student at the end of the semester for the following objectives:

Objectives
1. Create solution to rotating polarizer mount required for experiments in the laboratory
2. Detail electronic components necessary and design circuitry required to achieve activation of relative position of polarizer
3. Design a housing to mount on existing hardware located within the laboratory setup
4. Save detailed drawings and circuit diagram for submission
5. Test final configuration of the design

Requirements
1. Describe method of construction for original parts and outline purchased parts
2. Include design drawings and assembly views from SolidWorks
3. Record results of final design

Course Calendar:

<table>
<thead>
<tr>
<th>Week(s)</th>
<th>Milestone or Event</th>
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<tbody>
<tr>
<td>1-8</td>
<td>CAD and circuit design complete</td>
</tr>
<tr>
<td>8-16</td>
<td>Implement design on existing experiment</td>
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Grading Policy:
The grading for this course comes purely from the design reports due throughout the semester. It is the responsibility of the student to meet with the instructor throughout the semester to determine the grading criteria for the design reports. Letter grades are based on the following ranges:
A: 90.0 – 100, B: 80.0 - 89.9, C: 70.0 - 79.9, D: 60.0 - 69.9, F: 0 - 59.9.

Attendance Policy:
Attendance will be taken at the beginning of each class. If you have 3 unexcused absences, then your final grade will be reduced by one letter grade. If you have 4 unexcused absences, you will receive an “F” in the course. To receive an excused absence a written and signed notice is required within three class days of the absence. If you miss class without approval of your instructor you will receive a grade of zero on the missed assignment. Authorized absences must be approved by your instructor in advance of the absence unless you have an emergency or illness. Make-up work must be completed outside of normal class hours and within one week following an excused absence. It is your responsibility to see your instructor and make arrangements for make-up work.

ABET a-k Student Outcomes
In this course we will address the following a-k student learning objectives as outlined at [www.abet.org](http://www.abet.org):
(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) an ability to function on multidisciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Learning Outcomes
By the end of the course, a successful student will be able to:
1. Design an appropriate solution to the prescribed work. (SO-c)
2. Apply principles in engineering design to evaluate concept and final design. (SO-e)
3. Reference up-to-date engineering designs developed for similar applications. (SO-j)
4. Describe overall design choices in a comprehensive written report. (SO-g)
5. Test the experimental design and record results against requirements of project. (SO-b)

General Education Core Curriculum Objectives/Outcomes (EEO)
There are no specific general education core curriculum objectives in this course. This course is not a general education core curriculum course.
Academic Integrity (A-9.1)

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

Withheld Grades Semester Grades Policy (A-54)

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

Students with Disabilities

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.