Senior Clinic Studio 1 – ENGR 431, Section 01
Abilene Christian University

Credit Hours: 1

Semester and Year: Fall 2015

Pre-requisites/co-requisite: ENGR 430 is a co-requisite.

Class Meeting Times and Location
Tuesday in Bennett 114 from 1:30 pm. to 4:20 pm. Final presentations are is scheduled for 10:00 to 11:45 am on Friday, December 8, 2015.

Required Text and Software
NONE

Catalog Description
The studio component of the first of a two-course senior-level engineering design experience. Students will engage in team based professional level engineering design projects using design procedures to develop specifications, alternate solutions, and engineering drawing and plans while considering external constraints. When appropriate, students will construct, model, test, and evaluate designs.

Intended Audience
This is a required course for engineering majors and intended to be completed during the fall semester of the senior year.

Contact Information
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Office Hours: M (10:00 -11:00 am) T (1:30-2:30 pm) W (10:00 – 11:00 am and 1:30 – 3:30) and Friday (1:30 – 3:30 pm). Additional office hours can be arranged as needed.

TEACHING PHILOSOPHY

Engineering is a well-respected profession. The public entrusts engineers to be honest, competent, and ethical. Many codes of ethics for these fields indicate that the commitment to protecting the health, safety, and welfare of the public is of paramount importance. These values are in harmony with Christian principles and ideals. Christian engineers should be honest (Matthew 5:37), work hard to ensure competency (Colossians 3:23), and put the public's interest ahead of his or her own (Luke 6:31). In light of these principles, this course will be taught such that you will gain an appreciation for the professional nature of engineering. It will be taught so as to give you every opportunity to begin to develop competency in these fields. This will require homework, quizzes, test, and group discussion. The instructor especially encourages the discussion of topics that would bear on integrating faith and professional responsibilities (cheating on licensure exams, weapons design and manufacture, environmental laws and employment opportunities in developing nations, etc.)

Learning Objectives

The activities of the course support the assessment of the following ABET Outcomes:

Criterion 3

3(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

3(d) an ability to function on multidisciplinary teams

3(g) an ability to communicate effectively

3(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

ABET Learning Objectives	Course Competencies	Measurement[1]
3(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	Creatively apply systematic design process to a real-world problem	Final written project report
	Develop, evaluate, and synthesize alternate design solutions	Scope of Work Problem Statement Final written project report
3(d) an ability to function on multidisciplinary teams	Work productively as a member of an engineering design team	Team Member Assessments
	Interface effectively with clients and professionals in industry,/government/education	Statement of Qualifications Problem Statement Weekly Progress Reports Final Written Report
	Create and communicate professional, interdisciplinary ideas	Final Written and Oral Report Team Member Assessments Weekly Progress Reports
3(g) an ability to communicate effectively	Create professional written responses and reports constructed from technical publications and sources	Final Written Report Literature Review
3(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.	Utilize problem-solving and core engineering education to discover best practices and solutions for the design sponsor	Final Written and Oral Report Team Member Assessments
	Utilizing the sponsor identified constraints and professional standards to shape and evaluate the results of the design process	Problem Statement Final Written Report

[1] For sake of consistency, many submitted items will be assessed using a rubric developed by a faculty committee.

Description of activities students should expect in the course

Each student will be part of a design team. Course activities will include these and more over the course of the semester: presentations regarding professional practice standards, presentations and discussions regarding various stages of design project management and reporting, team and individual work on the design project, research online and/or in the library for literature related to the project, consultation with faculty and project customers about the project, preparing and presenting a variety of written and oral work products, and the iterative process of designing, building, testing and improving physical devices intended to meet project specifications defined by the customer. Success in this course will require a great deal of independent work focused on project-related tasks.

GRADING POLICY

This course is graded with ENGR 430 Senior Clinic 1.

ACADEMIC INTEGRITY POLICY

Academic integrity is defined as academic work completed as assigned for each class by the individual or group responsible for the work. Violations of academic integrity and other forms of cheating involve the intention to deceive, mislead, or misrepresent and therefore, are a form of lying. Such actions are contrary to behavioral norms that flow from the nature of God. Academic misconduct includes, but is not limited to, the following: 1) Failure to give credit to sources used in a work in an attempt to present the work as one's own, 2) Submission of papers or projects obtained from another source (e.g., research service or club paper file) as one's own, and 3) Falsifying information orally or in writing. Academic misconduct may result in, but is not limited to, a zero on the assignment and/or an F in the course. Additionally, the department chair, Dean of the College of Arts and Sciences, and the Dean of Student Life will be notified. See the full university policy, including how to appeal a decision, by following this link: http://www.acu.edu/campusoffices/studentlife/judicialDocuments/AcademicIntegrityPolicy.pdf.

ADA COMPLIANCE STATEMENT

"Abilene Christian University is dedicated to removing barriers and opening access for students with disabilities in compliance with ADA and Section 504 of the Rehabilitation Act. The Alpha Scholars Program facilitates disability accommodations in cooperation with instructors. In order to receive accommodations, you must be registered with Alpha Scholars Program, and you must complete a specific request for each class in which you need accommodations. If you have a documented disability and wish to discuss academic accommodations, please call our office directly at 325-674-2667."

THE MISSION OF ACU:

To educate students for Christian service and leadership throughout the world.

THE MISSION OF THE COLLEGE OF ARTS AND SCIENCES:

The College of Arts and Sciences engages students with humanity's greatest ideas to create understanding, apply insights, and serve the world as Christian thinkers and problem solvers.

THE MISSION OF THE ENGINEERING AND PHYSICS DEPARTMENT:

The ACU engineering program strongly supports the university's mission of educating students for Christian service and leadership throughout the world. In support of this mission, ACU engineering graduates will attain:

- a deep and broad understanding of engineering principles and practices as evidenced by professional employment, continued professional development, and graduate study in engineering or other professional fields.
- an extensive knowledge of the innovative design processes unique to engineering professionals as demonstrated by using critical thinking skills to contribute to the scientific and technical literature, patents and intellectual property, professional societies, and creative designs.
- *a thorough understanding of Christian service and leadership as shown in their commitments* ***to professionalism, ethics, and service and leadership within the engineering profession, the church, and society.***

COURSE SCHEDULE (Instructor reserves the right to modify the course schedule as necessary)

Week	Date	Topics/Activities	Assignment Due Date
1	8/26/2015	Syllabus, project identification, and group identification	None
2	9/2/2015	Group project assignments, contracts, sponsor visit preparation	Weekly Activity Report,
3	9/9/2015	Design Process Literature Reviews	Weekly Activity Report Team Logo
4	9/16/2015	Design Report expectations and deliverables	Weekly Activity Report
5	9/23/2015	Scope of work and Problem Statements	Weekly Activity Report Design Gant Chart
6	9/30/2015	Statement of Qualifications (SOQ)	Weekly Activity Report
7	10/7/2015	Resumes	Weekly Activity Report Scope of Work and Problem Statement
8	10/14/2015	Professional Presentations	Weekly Activity Report SOQ
9	10/21/2015	Patent Search	Weekly Activity Report Design Report Draft 1 (Electronic Submission)
10	10/28/2015	Economic Analysis	Weekly Activity Report
11	11/4/2015	Engineering and Industrial Standards	Weekly Activity Report Literature Review
12	11/11/2015	Dress for Success	Weekly Activity Report Design Economic Analysis Draft 1
13	11/18/2015	Presentation Practice Days in Class	Weekly Activity Report Design Report Draft 2

14	11/25/2015	Project Work Days	Weekly Activity Report
15	12/2/2015	Project Work Days	Weekly Activity Report
16	12/8/2015	Final Presentation of written and oral design report	Final Written and Oral Design Report