Junior Clinic – ENGR 390, Section 01
Abilene Christian University

Credit Hours: 3

Semester and Year: Fall 2015

Pre-requisites/co-requisite: Credit for or concurrently enrolled in one of ENGR 342/343 or ENGR 333.

Class Meeting Times and Location
Lecture Tuesday and Thursday in Bennett 233 from 12:00 pm to 1:20pm
Laboratory Tuesday in Bennett 114 from 1:30 pm to 4:20 pm
The final exam is scheduled for 10:00 to 11:45 am on Friday, December 8, 2015.

Required Text and Software
NONE

Catalog Description
A junior year 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. 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 junior year.

Contact Information
Name: Matthew Steele, Ph.D, P.E., Assistant Professor of Engineering
Office: Foster Science 317
Phone: 325-674-2002
Email: mts13a@acu.edu
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© 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 Draft Reports 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 Activity Reports Draft Reports Final Written Report Team Logo
	Create and communicate professional, interdisciplinary ideas	Draft Reports Final Written and Oral Report Team Member Assessments
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.

GRADING POLICY

Weekly Activity Reports – (14 reports x 10 points = 140 points)
Each project team is responsible to submission of weekly activity reports identifying concerns, indicating progress, and outline current plans for the project. Additionally, each team member will report their weekly time commitment to the project rounded to nearest 0.25 hour.

Participation/Attendance (50 points team assessment and 50 points faculty assessment and attendance record)
Part of your final grade in this course will depend upon your attendance and your respectful participation during class. Faculty assessments will be based upon student's professional characteristics including punctuality, attendance, collegial attitude, and participation. Participation may be evaluated at any time during class, students, either individually or as a group, are subject to be requested to participate in class discussions, demonstrations, and written exercises. Evaluations of each team member will be made by all members of the team regarding the contributions made by the team member.

Draft Reports (3 draft reports x 50 points=150 points)
Two draft submissions of a design project report and one draft submission of a design economic analysis are required during the semester to evaluated team progression and conformance to format and content requirements. Submission of a draft report includes posting to the project website hosted by the department.

Team Logo – (50 points)
Each team will develop a team logo that will be utilized on all team documents. The logo must be submitted digitally in a vector file format, and, upon approval of the instructor, the logo must be posted to the project website hosted by the department.

Scope of Work and Problem Statement / Statement of Qualifications – (110 points Total)
Each team will develop two professional documents for distribution to project sponsors and external project evaluators. The Scope of Work and Problem Statement and Statement of Qualification format will reflect the professional standards of the specific engineering industry of the project sponsor and/or external project evaluator.

Literature Review (100 points)
Each team member will a review the current literature related to the design project. **This is an individual assignment.** The literature review must contain a minimum of 2,000 words and 5 peer reviewed sources.

Final Written and Oral Presentation Submission – (200 points Total)
During the final examination time each project design team will submit their final written design report along with an oral presentation of the design detailed in the written report. Submission of the final written design report includes posting to the project website hosted by the department.

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.

Calculation of Final Course Grade-

Weekly Activity Reports	140 points
Team Logo	50 points
Scope of Work and Problem Statement	50 points
Statement of Qualifications	60 points
Literature Review	100 points
Draft Reports	150 points
Participation/Attendance	100 points
Final Written Design Report	100 points
Final Oral Design Presentation	100 points
Total Points	850 points

90% and above	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
59% and below	F

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	8/24/2015 8/26/2015	Syllabus, project identification, and group identification	None
2	8/31/2015 9/2/2015	Group project assignments, contracts, sponsor visit preparation	Weekly Activity Report,
3	9/7/2015 9/9/2015	Design Process Literature Reviews	Weekly Activity Report Team Logo
4	9/14/2015 9/16/2015	Design Report expectations and deliverables	Weekly Activity Report
5	9/21/2015 9/23/2015	Scope of work and Problem Statements	Weekly Activity Report Design Gant Chart
6	9/28/2015 9/30/2015	Statement of Qualifications (SOQ)	Weekly Activity Report
7	10/5/2015 10/7/2015	Resumes	Weekly Activity Report Scope of Work and Problem Statement
8	10/12/2015 10/14/2015	Professional Presentations	Weekly Activity Report SOQ
9	10/19/2015 10/21/2015	Patent Search	Weekly Activity Report Design Report Draft 1 (Electronic Submission)
10	10/26/2015 10/28/2015	Economic Analysis	Weekly Activity Report
11	11/2/2015 11/4/2015	Engineering and Industrial Standards	Weekly Activity Report Literature Review
12	11/9/2015 11/11/2015	Dress for Success	Weekly Activity Report Design Economic Analysis Draft 1
13	11/16/2015 11/18/2015	Presentation Practice Days in Class	Weekly Activity Report Design Report Draft 2
14	11/23/2015 11/25/2015	Project Work Days	Weekly Activity Report
15	11/30/2015 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

Laboratory periods are scheduled for team project work, instruction during these periods will be as needed to address project challenges as they arise.