Syllabus for
EGR 101—Introduction to Engineering
2 Credit Hours
Fall 2005

I. COURSE DESCRIPTION

An introduction to the profession of engineering. Topics include problem solving, engineering design of simple electrical and mechanical systems, introduction to computer programming using MATLAB and introduction to economics and ethics of engineering practice.
Course fee: $35.

II. COURSE GOALS

This course will enable the student to synthesize optimal engineering solutions during mechanical and electrical design competitions. This course not only serves to inform the student about the "art" of engineering, but also deals with the process of personal development needed to ensure that the student's behavior and attitudes support their goal of becoming a professional engineer.

III. STUDENT LEARNING OUTCOMES FOR THIS COURSE

A. Terminal Objectives

As a result of successfully completing this course, the student will be able to discuss the following:

1. Different disciplines of engineering.
2. Elements of creative problem solving.
3. How to develop engineering skills.
4. Engineering as a career.
5. Engineering economies, management, and ethics.
6. Engineering design process.
7. The use of computers in engineering.

B. Unit Objectives

As a result of successfully completing these units, the student will be able to discuss the following:

1. Unit 1: Engineering Disciplines: Introduction to the engineering profession and strategies for student success.
2. Unit 2: Creativity: Personal development and creative problem solving.
3. Unit 3: Mechanical Design Project: Aeronautics, glider development, wind tunnel testing.
4. Unit 4: Electrical Design Projects: Digital and audio systems development.
5. Unit 5: Computers: Introduction to computers and their role in solving engineering problems.
6. Unit 7: The Business of Engineering: Patents, entrepreneurialism, management, economics and ethics.

IV. TEXTBOOKS

Austin, Mark and Chancogne, David. Engineering Programming, C, Matlab, Java. New York: John Wiley & Sons, 1999.

Landis, George. Studying Engineering–A Road Map to a Rewarding Career. Los Angeles: Discovery Press, 2000.

V. POLICIES AND PROCEDURES

A. University Policies and Procedures

1. Attendance at each class or laboratory is mandatory at Oral Roberts University.
2. Double cuts will be assessed for absences immediately preceding or following holidays.
3. Excessive absences can reduce a student's grade or deny credit for the course.
4. Students taking a late exam because of an unauthorized absence will be charged a late exam fee.
5. Students and faculty at Oral Roberts University adhere to all laws addressing the ethical use of others' materials, whether it is in the form of print, video, multimedia, or computer software.
6. Final exams cannot be given before their scheduled times. Students need to check the final exam schedule before planning return flights or other events at the end of the semester.

B. Course Policies and Procedures

1. Evaluation Procedures
   a. Work conducted during each of the six units will contribute equally to the final grade.
   b. Instructors determine the evaluation procedure for their unit. Participation in discussions and projects are strongly encouraged.
   c. Homework and computer programs are due as announced. No late assignments are accepted.
   d. Required ePortfolio artifacts are to be promptly submitted by the student for assessment purposes. Failure to do so will result in a 5% reduction in the student's final grade.

VI. COURSE CALENDAR

WEEK	DATE	PROFESSOR	TOPIC
1	8/18	Halsmer	Course Introduction
2	8/23, 8/25	Halsmer	Introduction to the Engineering Profession
3	8/30, 9/1	Halsmer	Personal Development & Creativity
4	9/6, 9/8	Martin	Mechanical Design Project
5	9/13, 9/15	Martin	Fundamentals of Aeronautics
6	9/20, 9/22	Martin/Zhang	Aircraft Design/Electrical Engineering
	Glider Contest Wed 9/21 – 4:30-pm during Engineering Seminar at AC		
7	9/27, 9/29	Zhang	Digital Systems
8	10/4, 10/6	Zhang	Digital Systems Lab
9	10/11, 10/13	Liu	Economics Management & Ethics
10	**Fall Break (no class)**		Starts Oct 14, 4:30 pm Ends Oct 24, 7:50 am
11	10/25, 10/27	Liu	Future Trends in Engineering
12	11/1, 11/3	Liu/Ma	Image Processing/Computer Engineering
13	11/8, 11/10	Ma	Communication Networks
14	11/15, 11/17	Ma	Design in Electrical Engineering
15	11/22	Matsson	Experimentation in Fluids
	Thanksgiving Break (No Thursday class)		
16	11/29, 12/1	Matsson	Introduction to Computers
17	12/6, 12/8	Matsson	Introduction to MATLAB

Course Inventory for ORU's Student Learning Outcomes

EGR 101 – Introduction to Engineering
Fall 2005

This course contributes to the ORU student learning outcomes as indicated below:
Significant Contribution – Addresses the outcome directly and includes targeted assessment.
Moderate Contribution – Addresses the outcome directly or indirectly and includes some assessment.
Minimal Contribution – Addresses the outcome indirectly and includes little or no assessment.
No Contribution – Does not address the outcome.

The Student Learning Glossary at http://ir.oru.edu/doc/glossary.pdf defines each outcome and each of the proficiencies/capacities.

OUTCOMES & Proficiencies/Capacities	Significant Contribution	Moderate Contribution	Minimal Contribution	No Contribution
1 **Outcome #1 – Spiritually Alive** Proficiencies/Capacities				
1A Biblical knowledge				√
1B Sensitivity to the Holy Spirit				√
1C Evangelistic capability				√
1D Ethical behavior		√		
2 **Outcome #2 – Intellectually Alert** Proficiencies/Capacities				
2A Critical thinking	√			
2B Information literacy		√		
2C Global & historical perspectives			√	
2D Aesthetic appreciation				√
2E Intellectual creativity	√			
3 **Outcome #3 – Physically Disciplined** Proficiencies/Capacities				
3A Healthy lifestyle				√
3B Physically disciplined lifestyle			√	
4 **Outcome #4 – Socially Adept** Proficiencies/Capacities				
4A Communication skills		√		
4B Interpersonal skills			√	
4C Appreciation of cultural & linguistic differences			√	
4D Responsible citizenship		√		
4E Leadership capacity			√	

(Revised 1/15/04)