

EGR 190
Fundamentals of Engineering and Computer Science

All Quarters 2004-05

2004 – 2005 Catalog Data:

Provides a practical exposure to important applications and hands-on laboratory experience to give students an introduction to computer science and engineering. Teamwork and problem solving are emphasized.

Textbook and Other Source Materials:

Raymond B. Landis, *Studying Engineering A Road Map to a Rewarding Career*, 2nd ed., Discovery Press, 2000, ISBN 0-9646969-5-9

Lecture notes and Lab assignments on the EGR190 web site. www.cs.wright.edu/egr190/start

Coordinator:

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Schedule:

Class meets for 75 minutes once a week for lecture and for 2 hours twice a week for labs. An additional 10 hours involves teaming events.

Prerequisites: Less than 45 college credit hours.

Topics:

Week 1	Bridge Building Competition
Week 2	Engineering Art, E-mail and the Web
Week 3	3D Art and Fundamentals of flight
Week 4	3D Art and Web Design
Week 5	Exam 1 and Web Design
Week 6	Instrumentation, Web Design and Final Project Assigned
Week 7	Circuits and Engineering Math
Week 8	Timers, Flip-Flops and Exam 2
Week 9	Soldering and How Things Work
Week 10	Temp Sat and Ethics, and Presentation of Final Projects
Week 11	Final Exam

Learning Objectives and Desired Outcomes:

1. Learn to work on a team to accomplish a coordinated task.
2. Learn about flight, build a radio controlled plane and fly it.
3. Learn how to draw an object in 2 & 3 dimensions.
4. Learn how to develop a WEB page.
5. Learn how to use a multimeter, power supply, function generator, and oscilloscope.
6. Learn how to use a bread board and analyze basic resistor circuits.
7. Learn how to use some integrated circuits to build a device.
8. Learn how to solder
9. Learn how to calculate standard deviation and what it means statistically and practically.
10. Learn about engineering ethics and codes of conduct.
11. Improve writing skills.
12. Understanding themselves as an E&CS student and what engineering is about.

The student should be able to demonstrate knowledge of the above using:

1. A computer, engineering CAD, measuring instruments, wiring, and tools such as a soldering iron, bread board, wire strippers & pliers, and resistors, capacitors, LED's, integrated circuits, and Ohm's law.
2. Microsoft Word & Excel
3. HTML 4.0

Outcome Measures and Assessment:

A pre and post survey is given to learn if the students relate to the subject matter covered in the course. Writing skills are assessed through reports and a paper that meets the university writing across the curriculum requirements. Each lab requires a report that is reviewed and graded. Three exams are given. The first one tests their ability to produce an engineering drawing using CAD. The second requires them to use HTML to develop WEB pages with content that demonstrates their knowledge of statistics and resistive circuits. The final exam tests their knowledge of how measurements are done, circuit analysis, statistical math and principles of flight.

Teaming is assessed through three main events. Building a bridge and testing it to destruction, building a radio controlled airplane and flying it, and a final project requiring the development and building of a device that utilizing knowledge gained in instrumentation, circuits, and devices lectures and labs. Post questions are given for the plane and final project events.

The course text is used as a self teaching tool. The students are required to read the text and answer study questions at the end of the chapters. The text material is not covered in lecture. Through this process the students are exposed to self learning which involves study and living habits, understanding how they function as individuals, and how to be successful as an engineering student. Homework is required and receives a grade.