

**Assessment Report for EGR 190 Fundamentals of Engineering & Computer Science  
May 2007**

**Course Objectives and GE Learning Outcomes:**

There are four goals for this course: to introduce students to engineering principles through hands-on experience, foster collaboration among students through cooperative team project activities, establish a sense of community among the students, and develop an understanding of how to be successful in studying engineering.

The course consists of one weekly lecture and two weekly labs, a computer based lab and an instrumentation based lab. The student will learn about basic engineering tools such as data acquisition, test equipment, computer aided drafting, MathLab, and gain computer skills in web searching, web page design, and communications. They will also learn about themselves as a person and as a student, and actually design and build things.

**The writing intensive component** contributes to the writing across the curriculum objectives which are:

1. To improve students' writing proficiency – their ability to develop ideas and transmit information for an appropriate audience in an organized, coherent fashion while writing with appropriate style and correct grammar, usage, punctuation and spelling.
2. To encourage students to use writing as a learning tool to explore and structure ideas, to articulate thoughts and questions, and to discover what they know and do not know, thereby empowering students to use writing as a tool of discovery, self-discipline, and thought.
3. To demonstrate for students the ways in which writing is integral to all disciplines, essential to the learning and conveying of knowledge in all fields.

**Assessment:**

There were three members on the E&CS assessment committee.

Blair A. Rowley, Freshman Program Director, E&CS  
Ruby Mawasha, Assistant Dean, E&CS  
Thomas Bazzoli, Assistant Dean, E&CS

Assessment was been done using marker questions from examinations and reviewing the WAC assignment. Ten students were chosen at random.

Marker questions were chosen to test how students performed in understanding engineering principles. These were:

1. Application of engineering instruments for measuring circuit parameters,
2. Circuit analysis involving series and parallel resistors,
3. Analyzing a circuit using Ohm's law and Kirchhoff's voltage law.

The methods for fostering collaboration, developing a sense of community, and being successful in studying engineering were also reviewed. These consisted of student surveys, and completion of homework.

Homework was used to provide students an understanding of how to be successful in studying engineering. The text book used proved successful and all students who passed completed all assignments.

Writing was evaluated by examining how students did in meeting the WAC requirements. These requirements were spelled out on the course's web site and a rubric was used in grading. The WAC consisted of a description paper on how some item of technology works. The students were allowed to choose their subject. It had to have sufficient complexity to be able to provide enough detail to be interesting. They submitted a first draft which was reviewed and returned. The students rewrote the paper and submitted a final copy. The final copy was graded using the rubric.

The paper had to meet the following minimal requirements.

1. Adhere to the form described above and be written using MS Word.
2. Include at least one diagram or illustration. Each diagram or illustration **must** be integrated and discussed in the text.
3. Document the source of your material, diagrams, illustrations, etc.  
[\(Documentation\)](#)
4. Contain enough text to fill 3 pages (1500 words) if you excluded all diagrams and illustrations.
5. Single space, 12pt type, Times New Roman font, 1 inch margins all around.
6. Be written for non-technical readers, which means keep it simple and straight forward.
7. Be shared with others to get feedback. (Consider that it may be put on a web site for others to look at.)
8. Have a backup copy.

#### **Results:**

##### **Spring 2006**

Data for spring 2006 is not available. The course professor had to leave on a personal emergency the last week of the course and the spring data was mistakenly shredded.

##### **Fall 2006**

Marker question one: nine were correct – 90%

Marker question two: ten were correct – 100%

Marker question three: seven were correct – 70%

##### **Winter 2007**

Marker question one: nine were correct – 90%  
 Marker question two: ten were correct – 100%  
 Marker question three: seven were correct – 70%

**WAC grades were**

Fall 2006 - 100, 88, 90, 100, 100, 100, 0, 100, 100, 80  
 Winter 2007 - 100, 100, 95, 100, 100, 100, 100, 100, 100, 100  
 Student feed back from teaming events follow:

Survey Items Flying Project	Percentage	
	Yes	No
Do you have prior experience to flying RC planes	10%	90%
Did this project contribute to your learning experience?	100%	0%
Did you have fun in this project?	100%	0%
Did this project Increase your interest in engineering and computer science?	90%	10%
Did this project helped you develop your ability to work as a team member	100%	0%
	<b>Overall Average 1- Low, 5-Highest</b>	
Rate the difficulty of this project in comparison with other work	1.9	
How well did all your team members work together as a team?	4.7	

Survey Items Final Project	Fall 2006
Number of different projects considered before finalizing on the project	2
Total Project Cost per person	\$22.5
Used experience gained from the EGR 190 labs	Yes
Number of times team met	4
There was a team leader for the group	40%
Work was distributed evenly	80%
Sought outside help during the project	70%
Time Spent on Power Point Presentation	1 hour
Time Spent on Verbal Presentation	25 min

Personal contribution to the team	70%
There was better communication in the team as time went by	70%
Everyone accepted their responsibilities	100%
Everyone attended all the meetings	60%

**Conclusions:**

Compared to the 2006 assessment report the marker questions show improvement. Circuit analysis improved 20%, and use of Ohm's and Kerchoff's laws improved 30%. Application of instruments remained the same.

Marker Question	% Correct 2006	% Correct 2007
one	90	90
two	80	100
three	40	70

Based upon the marker questions the area of Ohm's and Kirchhoff's laws still needs improvement. More emphasis in lecture and lab with more practice problems are to be tried.

The teaming events provide students basic understanding and training on engineering principles, teaming, communication skills, and leader ship qualities. Although each project varied in the requirements, all of them focused on teaming. The bridge building project helped students meet one another and start keeping an engineering log. The airplane project taught principles of flight and tied it together by team building a plane and learning to fly. This helped increase their interest in engineering and computer science, further developed their teaming, and was a good learning experience. The final project helped students understand how to apply what they learned in lecture and lab, increased their teaming, and contributed to their communication skills.

Review of the students WAC papers showed a good grasp of what was required. The grading focused upon the technical content rather than the structure. However the information had to be presented in a readable and fairly well structured format. The requirements for the WAC assignment were met.

Overall the course is meeting its objectives well.