Instructor Information
Instructor: Tom Merrill, Ph.D.
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Support Hours: Th: 1-3 pm and by appointment
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Project Times and Information
Rowan Hall Project Work: T and Th 12:15 – 3:00 pm [ 5.5 hrs / week ]
Outside Work: 2-4 hrs /week.
My Website http://users.rowan.edu/~merrill
Wiki Project Site to be announced

Course Learning Goals

After completing this course you should be:
- Able to research an engineering problem, including writing a problem statement and outlining potential solutions.
- Able to organize and carry out a set of design and testing activities to complete a project or subproject.
- Able to communicate in oral and written forms various project documentation including: problem statements, design specifications, test protocols, test summaries, email updates, interim progress reports and final reports.

Course Description

The clinics are designed to provide students with professional training and experiences before leaving Rowan. Skills such as project management and technical communication are a key part of becoming a successful engineer. Please use this opportunity to improve these skills and identify areas of weakness.

Consider this scenario. You’ve been at your first full time engineering job for one month and your supervisor asks you to join a meeting. At the meeting, experts from all over the organization are discussing a lingering problem that is slowing down new product development. No new products and you’ll continue to lose market share to your competitors. After the meeting your supervisor describes part of the problem he wants you to own and find solutions.

This is the scenario that will happen many times after Rowan. This engineering clinic is designed to help you succeed when it does happen.

Student Centered Learning & Leadership

Each engineering professor has a different style and approach to clinics. I look at clinics from two perspectives:

1) I am an engineering consultant that can steer you technically in directions that have worked for me and
2) I am an engineering educator whose responsibilities extend from physics education to professionalism.

I expect your student team to lead and propel the project forward, hence the phrase: “student centered learning and leadership”.

My preference is not to be your program manager; I want that leadership role to come from within your team. If I lead the project – the clinic’s value is diminished. It becomes like most other project-based learning exercises
you've already experienced. I want your clinic to be different. I want you to learn how to become independent and resourceful engineers.

**Typical Project Activities**

Here are some of the basic activities of a clinic project:

1. Initial introductory meeting
2. Kickoff meeting
3. Information gathering (conversations with sponsor, literature review, etc.) and problem statement refinement
4. Designing, re-designing, and prototyping (virtual and physical)
5. Testing, re-testing, and reporting.
6. Progress report meetings and problem solving meetings
7. Final report writing and presenting.

**Typical Work Week Tasks**

1. Write a test protocol and ask for feedback from team members.
2. Setup an experiment with team members.
3. Summarize literature review findings on a particular aspect of the engineering problem.
4. Begin pilot testing of designs.
5. Present a status update at a Progress Report meeting.
6. **Weekly Progress Email** (concise using a bulleted or numbered structure)

**Course Grading**

Like the post-Rowan engineering scenario described previously, there are no quizzes, homeworks, or exams used to assess you. Instead, your assessment is determined by how well you and your team solve or approach the engineering problem you face (Table 1). Here are the work components I will be assessing:

- **Project management**: progress reports, weekly meeting summaries, effective use of your team member talents
- **Design, Testing, and Analysis**: careful use and application of engineering science
- **Technical communication**: clear and concise problem statements, test protocols, test results, weekly progress emails, and reports
- **Professionalism**: the ability to work effectively within your team, with vendors, and with your sponsor.

**Table 1: Jr / Sr Engineering Clinic Rubric**

<table>
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<tr>
<th>Grade</th>
<th>Work Quality</th>
<th>Attributes Typically Found</th>
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| A     | Outstanding  | In addition to doing all the work requested, you consistently:  
|       |              | • taking charge of project or subproject  
|       |              | • thinking independently, propelling the project forward without direct instruction or guidance.  
|       |              | • creating original solutions using engineering theory and outside research  
|       |              | • communicating project status and technical information with clarity |
| B     | Professional | Do all the work you are asked to accomplish  
|       |              | Periodically taking charge, thinking independently to create tasks and find solutions without direct instruction or guidance. |
| C     | Adequate     | Do most of the work you are asked to accomplish  
|       |              | Consistently requiring close supervision and guidance to complete tasks with professional quality and on time. |
| D     | Inadequate   | Do some of the work you are asked to accomplish, but usually with low quality and requiring extensive supervision |
| F     | Poor         | No showing up and doing little work. |
Course Grading Continued

Most students show professional or adequate work quality. Earning an A in engineering clinic is difficult. Many times it’s not a matter of talent or skill, rather available time with current course loads. If you have time in your schedule and you sincerely want to earn an A – please come see me in my office periodically to make sure we’re on the “same page”.

Regarding your ability to provide formal feedback to me, at both mid-semester and at the end-of-the-semester I will ask you to fill out self and team assessment sheets.

General Policies and Ideas

Email

Please communicate with concise language, using a professional tone and style. Please number your specific questions instead of embedding them into block paragraphs. I will check my email on a fixed frequency and respond quickly. If I do not – please resend a gentle reminder.

Missing Project Times or Meetings

If you expect to miss a project time or meeting. Send an email to your team, copying me explaining why you will miss the meeting and what you plan to do to make up the time.

Midterm or Final Reports

I expect to see the final draft in my INBOX one week before the report is due or presented. I need at least that amount of time to review the document and provide helpful feedback. When you present material you are a reflection of me as well as Rowan University.

Internal Written Document Reviews

Documents such as protocols, test reports, and literature review summaries should be shared internally before they are delivered to me. The final draft delivered to me should reflect the “collective wisdom” of your team.

Follow Through is Everything

Your ability to first understand a task and second take it to completion is critical for your team’s success. If you find you CAN NOT complete a task or that there will be a DELAY in task completion, PLEASE communicate that to your team and to me immediately.

Academic Integrity

I value integrity. The damage to your reputation that results from academic dishonesty is hard to overcome. Matters of academic misconduct will follow guidelines stated in the “Rowan University Student Handbook.”

Academic dishonesty unchallenged becomes professional dishonesty. The damage from this dishonesty in the workplace goes beyond reputation; it has serious consequences for your freedom, your health and the well-being of the people and the environment around you.

Accessibility Note – Rowan University

Your academic success is important. If you have a documented disability that may have an impact upon your work in this class, please contact me. Students must provide documentation of their disability to the Academic Success Center in order to receive official University services and accommodations. The Academic Success Center can be reached at 856-256-4234. The Center is located on the 3rd floor of Savitz Hall. The staff is available to answer questions regarding accommodations or assist you in your pursuit of accommodations. We look forward to working with you to meet your learning goals.