Freshman Engineering Clinic II (FEC II) – 21204 Section 17 Syllabus

Pre-requisite: Freshman Engineering Clinic I

Instructor Information

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Course Information

Section 17
M: 6:30 PM-7:45 PM Rowan Hall Extension 241
W: 5:00 PM-7:45 PM Rowan Hall Extension 241

Office Hours

Can be scheduled by appointment. Just e-mail and then a mutually agreeable time will be arranged to meet.

FEC II Themes: Design for All & Product Development

Engineers develop products for customers. Engineers that can design for many different customers have an advantage. In FEC II we focus on designs that everyone can use (Universal Design) and designs for people living in impoverished circumstances (Design for the Other 90 %). We consider existing products or technologies in our Universal Design and Design 90 projects. The Universal Design project includes developing a new product. The semester ends with a professor-selected project that includes product (or process) development.

FEC II Objectives

1) Introduce students to the science and art of design through product development, Universal Design, and Design for the Other 90 %.
2) Introduce multidisciplinary teams of engineering students to unifying engineering science principles such as mass, momentum and energy balances; materials; thermodynamics, and electricity/magnetism using a consumer product or engineering process as a test bed.
3) Enable students to determine how scientific principles, material properties, manufacturing techniques, cost, safety requirements, environmental considerations and intellectual property rights impact product development, within the context of ethical behavior.
4) Continue development of technical communication skills in graphical, written, and oral formats.
5) Continue development of time management and critical thinking skills.

Textbooks and supplies

- FEC II web-book on PathFinder (at NO cost)
- Engineering Paper, e.g., Engineer's Computation Pad, Ampad Corporation*
- Laboratory notebook w/ numbered pages, duplicate page sets; e.g., Boorum #09-9088*

*You should already have these from FEC I.

Course Topics (addressed in "un-lecture" AND incorporated into projects)

- Product Development
- Ethics/Safety/Professionalism/
- Intellectual Property
- Engineering Statistics
- Engineering Economics
- MATLAB
- Universal Design & Design for the Other 90 %

Course Schedule

See the end of syllabus. Please note that like any plan, it may change during the course of the semester.

Grading

This course is only offered for grade credit. The grading scheme is given in Table 1. Points will be deducted from your final grade for unprofessional, unethical, or unsafe behavior.

Table 1: Grading Scheme

Engineering Projects (Reports, Memos, Annotated Bibliographies, Presentations, Lab notebook, In class performance, etc.)	50%
Homework (Other than GameLab) (PathFinder exercises, In-class assignments or quizzes, etc.)	10%
GameLab	15%
Professionalism	5%
Midterm Exam	10%
Final Exam	10%
Total	**100%**

*If your instructor chooses to use a different scheme, you will be notified in writing.

All work is due at the beginning of the class period and should be presented in a professional manner. It is your responsibility to turn in the homework at the beginning of class without prompting from the professor. Late work will be penalized 10% immediately and 10% for each additional day it is late. Late work will not be accepted for unexcused absences. Use the Rowan Engineering homework format introduced in FEC I.

Game-based Learning (GameLab)

All homework assignments will be completed using the 3D Game Lab portal and hence will be completed at the student's own pace. As soon as an XP of 1,250 is reached (Engineering Assistant status) they will be considered to have gotten full credit for their other homework

assignments for the semester (15%) but you may continue to complete quests at your discretion if interested.

To ensure that you are properly pacing your completion of the assignments on 3D Game Lab, it will be necessary for all students to attain 350 XP by midnight on February 12th, 700 XP by 11:59PM on March 5h and 1,050 XP by 11:59PM on April 2nd. If any of these XP related goals are not met, it will result in a 10% reduction in your other homework score (i.e. 1.5 homework points out of a possible 15 homework points would be lost). For example, even if a student were to attain 1250 XP at the end of the course but did not reach 350 XP by February 12th they could attain a maximum of 13.5/15 for their homework grade in the course or a 90%.

All homework assignments will be completed using the 3D Game Lab portal and hence will be completed at the student's own pace. As soon as an XP of 1,250 is reached (Engineering Assistant status) you will be considered to have gotten full credit for GameLab for the semester (15%) but may continue to complete quests at your discretion if interested.

Although homework assignments can be completed while working in a group, it is the responsibility of each individual student to submit their own individual work for the assignment. It is unacceptable for a student to submit a copy of another student's work.

Extra Credit

An excellent method to gain insight into a field of engineering is to attend engineering student club and engineering professional society meetings. Appropriate Rowan Groups are described in the course web-book. You will receive 0.5 points per meeting added to your final grade, up to a total of 3 points during the semester. To obtain credit for attending a student meeting you must document your attendance.

- The online event submittal webpage of the Rowan Seminar Passport Program (include a selfie taken at the meeting that includes an officer, faculty member, or relevant white board)-**The last day to submit is April 20th.**

To expand your knowledge of all engineering fields, you are encouraged to attend meetings of engineering clubs outside of your chosen engineering discipline; however, you may attend the meetings of a given club multiple times. Check e-mail, websites, Facebook, and bulletin boards in Rowan Hall to find out about meetings. You professor may allow you to substitute other events for engineering club meetings.

"Un-Lectures" and Labs

This course consists of both classroom and laboratory sessions. We call the classroom sessions "un-lectures" because passive lectures are replaced with activities that create an active, constructive, interactive learning environment. You will meet with your section instructor in the room(s) shown on your course schedule (and Banner).

In Class Assignments and Quizzes

May be given at discretion of section instructor. Please see your instructor for details.

Midterm and Final Exams

The format and length of the midterm exam will be determined by each section instructor. A two-hour final exam will be scheduled during finals week.

Computer Usage

Students are introduced to MATLAB in this course. They will also use word processing software. Other engineering computer skills applied in the course may include: spreadsheets; computer-aided design; symbolic programming; and the use of application software.

Teamwork

The grade received on all team assignments is a "raw score". Raw scores will be averaged and then adjusted according to each individual's contribution to the overall team effort. Each team member will be evaluated by every member of the team, including him/herself using CATME. The adjusted score (not the raw score) will be used in calculating course grades. Thus, the student who consistently demonstrates a higher level of effort will be rewarded. Likewise, the student who contributes less than the average effort to team assignments will be penalized.

Professional Conduct

Expect to be graded on your professionalism in this course. Many people--including your fellow employees, community and family--rely on your professional decisions and actions. Your work should place the highest value on safety. In addition, engineers are expected to consider the ethical and environmental consequences of their actions. In seeking internships and fulltime employment, employers will ask professors their opinion of not only your excellence in engineering, but also your ability to make engineering decisions that are safe, ethical and environmentally responsible. The practice of professionalism will be divided into the three areas of *safety, attendance, and ethics*.

Examples of Good and Poor Professional Conduct

Good Conduct	Poor Conduct
• Arrive on time • Pay attention • Good attendance • Prepared (read the text, review notes from previous class, read handouts before coming to lab) • Follow good laboratory safety practice (safety glasses, long pants, closed shoes, follow precautions for specific experiment) • Respect the office hours • Prepared for office hours	• Arrive late for class frequently / making a conspicuous and disruptive late entrance. • Not paying attention in class (reading newspaper, text messaging, tweeting, checking Social Media, etc.) • Disruptive behavior in class (side conversations, watch movie, etc.) • Ignore good safety practice (no safety goggles, shorts, sandals etc.) • Absent from class frequently • Unprepared for class

• Good attitude toward learning and problem solving • Make constructive comments	• Disregard office hours • Not prepared when coming to ask questions during office hours

Safety

Safety is of critical importance. You will receive rules and guidelines that must be followed. Failure to follow safe laboratory practices can lead to accidents that can endanger you and other students. Your grade will be reduced if you fail to follow proper safety procedures.

The Office of Research Compliance and Environmental Health Safety at Rowan have developed a comprehensive web-based mandatory laboratory safety training program for working in research and teaching laboratories. All faculty, staff and students working in research and teaching laboratories must complete the mandatory "General Laboratory Training" (ID: 104958) before starting laboratory work. This training is required annually.

To complete this web-based training, go to https://www.citiprogram.org. If you already have an account with CITI training program, there is no need to register at the CITI training site. Proceed to select the appropriate training module. If not, click on "Register" to "Create Account" and follow directions to provide your "Personal Information". You may use your Rowan username and password. You must answer all questions before selecting a training module.

Policies

You need to be aware of the various University-wide policies that can affect you. These policies are available at confluence.rowan.edu/display/POLICY/Academic+Affairs.

Some policies of note include:

- Classroom Behavior Policy: confluence.rowan.edu/display/POLICY/Classroom+Behavior
- Academic Integrity Policy: confluence.rowan.edu/display/POLICY/Academic+Integrity+Policy
- Mobile Electronic Device Policy: confluence.rowan.edu/display/POLICY/Mobile+Electronic+Device+Policy
- Attendance Policy: confluence.rowan.edu/display/POLICY/Attendance+Policy

Attendance is required, since a substantial amount of material is presented for which no texts are available and many of the laboratories and in-class exercises will be conducted in teams. In addition to classes, you are expected to attend all scheduled team meetings.

Habitual late arrival or absence from class is unprofessional and unacceptable. You will receive credit for attendance in class only if you are *present at the start* of the class period. If you know that you will be absent from class for a valid reason, obtain approval from your instructor 24 hours before the class period. The only exception is a medical emergency.

Week of	Topics	Reading (Pathfinder)	Deliverables*
15-Jan	Course Introduction	FEC II Intro Product Development	--
22-Jan	Product Development Intellectual Property	Intellectual Property Eng Communication II	--
29-Jan	Universal Design (UD)	Universal Design	--
5-Feb	Universal Design	Eng Statistics I	UD Memo #1 (Team)
12-Feb	Universal Design	Eng Statistics II	UD Memo #2 (Team)
	350 XP Deadline for 3D GameLab at Midnight		
19-Feb	Universal Design	MATLAB	UD Memo #3 (Team)
26-Feb	Design 90 (D90)	Design 90	UD Team YouTube Video
5-Mar	Design 90	Eng Economics I	UD Team Design Report (Team)
	700 XP Deadline for 3D GameLab at Midnight		
12-Mar	***Spring Break***		
19-Mar	Design 90	Eng Economics II	D90 Tech Transfer Presentation (Team)
26-Mar	--	Ethics	--
29-Mar	***Midterm***		
2-Apr	Algae Project (Intro and Algae Growth Lab)		D90 Water Supply Memo with MATLAB code(Ind) D90 White Paper (Team)
	1,050 XP Deadline for 3D GameLab at Midnight		
9-Apr	Algae Project (Gas Transfer Lab)	NA	Movie Reflection
16-Apr	Algae Project (Algae Applications)	NA	Growth Study Report
23-Apr	Algae Project (Wrap Up and Final Presentations)	NA	Gas Transfer Memo (Team) Final Presentations (Team)
30-Apr	***Final Exam (Date TBA)***		

*Assignments shown on the right-most column of the course schedule are due at the start of Lab, unless otherwise noted. PathFinder BEFORE exercises are due midnight on the Monday of the week the chapter appears on the course schedule.

Academic and Work Conduct

Your ability to work effectively with your coworkers (classmates) and team leaders and managers is being formulated through your university experience. If you contribute creatively and effectively to the workload of your team in homework and laboratory assignments, and studying for quizzes and the exams, then you will be successful in your academic endeavors. If you are careless in your work, no company will want to hire you.

Your academic success is important. If you have a documented disability that may have an impact upon your work in this class, please contact your instructor. 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. If you arrange for an alternate test taking environment, you must let your professor know ahead of time.

The policy in this class in matters of academic misconduct will follow that stated in *University Student Handbook*. Any student cheating in this class will receive a grade of F for the course. Cheating includes receiving or knowingly providing information by any dishonest or deceptive means. For paper HW assignments, copying is writing on your paper while looking at another student's paper. When working electronically, copying is when two students are working on one computer or a student uses a file created by another student.

Freshman Clinic
Extra Credit Form

To obtain credit for attending a student meeting you must complete one section of this form. **All of the fields must be completed out for each meeting attended. Return this form to your professor at the end of the semester.** Check email and social media to find out about meetings.

Name of Organization/Society	
Date	
Topic of Meeting	
Signature of Faculty Advisor/Student Officer	
Name of Organization/Society	
Date	
Topic of Meeting	
Signature of Faculty Advisor/Student Officer	
Name of Organization/Society	
Date	
Topic of Meeting	
Signature of Faculty Advisor/Student Officer	