Roanoke College (Fall 2022 – 2023) Department of Mathematics, Computer Science and Physics

ENGS-200-A Engineering Design Exploration TH 01:10 pm - 02:40 pm TREX 362

Instructor: John F. Pescatore Office: Trexler #175

Office Hours: 10:00 - 11:00 T W Th and 2:00 – 4:00 T (also by appointment)

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ENGS 200 Engineering Design Exploration
This course is an introduction to the process of engineering design with an exploratory "hands-on" approach. The focus of the course is experiential learning while supported by instruction and guided activities that highlight the underlying concepts in engineering design. (1/2)
Lab: 3 hrs./wk.
Prerequisites: ENGS 191, 192.

Introduction

Engineering design can comprise a variety of specialty applications ranging from computer modeling and numerical simulations to production of detailed drawings and specifications to manufacturing/ construction.

Course description

For this course, under direction and guidance of the instructor, students will collect, assess, and evaluate a variety of data required to undertake a design project. Subsequently, students will use technical data in the formulation of a design as part of a group effort through drawing, report, model and/or oral presentation.

Students will evaluate, as part of the design process, (1) health and safety considerations over the life cycle of the project, i.e., design, construction, maintenance, and demolition (2) estimate cost and (3) carbon footprint as needed.

Learning outcomes

Ability to apply knowledge and principles of mathematics, science, and engineering in the development of a team design project with adherence to social, economic, and environmental considerations.

Ability to collect, analyze and interpret data.

An ability to participate in projects that are multi-disciplinary.

Ability to identify, formulate, and solve engineering problems.

Tentative course schedule

The following schedule table is approximate and subject to change. The table, albeit subject to modification, should provide a general picture of the timing for content presentation and assignments.

Teaching week	Dates	Lecture material	Assignment
1	8/29 – 9/02	Introduction/ survey of student interests	
2	9/05 – 9/09	Team organization and topic assignments	
3	9/12 – 9/16	Data collection and analysis methods	
4	9/19 – 9/23	Drawing/ graphic production resources	
5	9/26 – 9/30	Computational resources, e.g., MATLAB, EXCEL, Minitab, etc.	
6	10/03 – 10/07	Health & safety report	
7	10/10 – 10/14	Project budget considerations; materials costs	
Fall break			
8	10/24 – 10/28	Team status report(s)	
9	10/31 – 11/04	Draft PowerPoint	
10	11/07 – 11/11	Final PowerPoint	
11	11/14 – 11/18	Student presentations	
12	11/21 – 11/25	Thanksgiving week	
13	11/28 – 12/02	Student presentations	
14	12/05 – 12/09	Course review	
Final examination week		**12/12 – 12/16**	

Attendance policy

Class attendance is an especially important aspect of a student's success in this course. ***Each student is expected to attend every class and is accountable for missed content and assignments.*** If you have a temperature of 100.4 or higher or other COVID symptoms, do not come to class. Call Health Services IMMEDIATELY. Do not come to class or go to any public area on campus. For your absence to be excused, you must give Health Services permission to notify me that you have consulted them about COVID symptoms. If Health Services informs you that you should isolate and not attend class for multiple days, inform me so that we can plan to keep you current in the course. All absences caused by consultation with Health Services about Coronavirus symptoms or isolation ordered by Health Services will be excused but you will need to do the work and graded assignments even if we extend a deadline for you.

Athletic commitments

College athletes must notify me of any scheduled absences or unavoidable post-injury absences.

Masks

The college is starting the term without a specific mask mandate. Some offices on campus may require that masks be worn (such as Health Services). For this class, masking is optional.

Course materials

(1) Textbook: There is no specific textbook required. I will provide (a) handouts for each class and digital content on Inquire, (b) non-RC books on reserve at Fintel.

(2) Calculator: A scientific or graphing calculator is required.

(3) MATLAB/Octave will be used. The instructor will provide instruction on installing Octave on your personal computer.

Structure and grading

A letter grade will be assigned after final grades are computed for the term as per the scale below. Attendance and class participation will be considered when determining marginal grades.

Grading scale

A (100-93) A-(92.9-90)

B+ (89.9-87) B (86.9-83) B- (82.9-80)

C+ (79.9-77) C (76.9-73) C- (72.9-70)

D+ (69.9-67) D (66.9-63) D- (62.9-60) F (59.9 and down)

The (numerical) final course grade will be determined by the quality of the presentation, accounting for how well each team worked including, but not limited to, communication, equal distribution of work and answering questions from the instructor and the class during each team presentation, and the final examination (if required by the College).

Assessment	Weighting	Date
Presentation & teamwork	90%	November
Final examination	10%	TBD
Total	100%	

Test make-up policy

Test make-ups are administered in accordance with Roanoke College policy. Anticipated, excused absences must be reported to the instructor with appropriate certification well before the scheduled test date. Legitimate emergency absences must be reported with appropriate documentation within one week of returning to class. No other make-ups will be given.

Corrections to grading

If you think an error may have been made in the grading of your test, carefully review the answer key posted on Inquire and then contact the instructor within 1 week of the test's return with your question. Do NOT alter the original work. The entire test may be re-graded, and the test grade is subject to remain the same, increase or decrease at the discretion of the instructor.

Final examination

The final exam will be a comprehensive assessment focused on all tasks involved in the completion of each team project.

Expected work policy

This course requires you to spend at least 2 hours of study outside of class for every class hour which is a minimum of 12 hours total work each week inside and outside of class.

Electronic devices

Scientific/engineering calculators, desktop and/ or and personal computers will be be used in this class. I prefer cell phones be left in your backpack and set on silent mode; however, I understand you may need your cell phone active in anticipation of a medical-related call, for example, if you have an immediate family member hospitalized.

Inquire policy

Students are required to be knowledgeable of all postings on Inquire. Each student shall regularly monitor Inquire for course information. Any assignment that requires an Inquire upload will not be accepted in any other form. Uploaded files must be PDF format and readable on the instructor's college computer. Each student must ensure the successful submission of any document and resolve technology problems through the college's IT department.

Academic integrity

I expect all students to follow the rules outlined in Academic Integrity policies of Roanoke College because your learning and integrity are at the core of your RC education.

http://www.roanoke.edu/academicintegrity https://www.roanoke.edu/aihandbook

Any in-class assessments will be closed book/notes; therefore, students are not permitted to consult any texts, notes, or other prepared materials during a testing period as such action is a violation under cheating.

Except for team/ group work, all other graded work shall be your own work! Questions about how these

Academic integrity (continued)

policies apply to our class should be directed to the instructor. Any violations of AI policies will automatically be turned over to the Academic Integrity Council.

All source material must be properly cited using the MLA conventions and use paraphrases or quotations when appropriate. Drafts must include citations. Note that paraphrasing is more than rearranging a few words. I am happy to help, but also encourage you to use the Writing Center at all stages of your paper writing. The instructor will address the need for proper citation and references pertaining to the writing assignment

Online testing – the instructor does not anticipate quizzes or tests administered via Inquire unless there is another coronavirus outbreak or similar pandemic. In the event of going online, the instructor will address policy regarding open book/notes. Any use of outside assistance for online assessments such as 'web-based apps and Chegg, Course Hero, and r "homework help" sites is not allowed; further, upload of any quiz or test questions to such sites is forbidden.

Accommodations

If you may require an accommodation in this course, please provide me with your documentation within the first 2 weeks of the semester. I must have your documentation at least 48 hours prior to any accommodation made. (Check with the Center for Learning and Teaching for their scheduling guidelines.)

Subject Tutoring

Subject Tutoring, located on the lower level of Fintel Library (Room 5), is open 4 pm – 9 pm, Sunday – Thursday. We are a Level II Internationally Certified Training Center through the College Reading and Learning Association (CRLA). Subject Tutors are friendly, highly-trained Roanoke College students who offer free, one-on-one tutorials in a variety of general education and major courses such as: Business, Economics, Mathematics, INQ 240, Modern Languages, Lab Sciences, INQ 250, and Social Sciences (see all available subjects at www.roanoke.edu/tutoring).

Tutoring sessions are available in 30 or 60-minute appointments. Schedule an appointment at www.roanoke.edu/tutoring, or contact the center at (540) 375-2247 or subject_tutoring@roanoke.edu.

Writing Center

The Writing Center at Roanoke College offers tutorials focused on writing projects and oral presentations for students working in any field. Writers and presenters at all levels of experience may consult the Writing Center at any point in their process— including brainstorming, drafting, organizing, editing, or polishing presentation skills—to talk with trained peer tutors in informal, one-on-one sessions. Schedule an appointment at www.roanoke.edu/writingcenter, where our staff members and workshops are also posted. Questions? Email the center: writingcenter@roanoke.edu.

Accessible Education Services (AES)

AES is in the Goode-Pasfield Center for Learning and Teaching in Fintel Library (clt@roanoke.edu)

AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. To schedule an appointment, call (540) 375-2247 or e-mail aes@roanoke.edu.

If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact the AES at your earliest convenience to schedule an appointment and/or obtain your accommodation letter for the current semester.

References

References will be uploaded to Inquire as needed during the semester.