

Introduction to Engineering II: EGR192
Elizabethtown College
Spring 2018

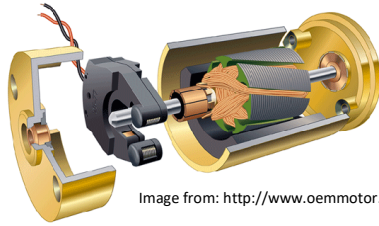


Image from: <http://www.oemmotor.se>

Meetings: M, W 2:00-3:50 (section A)
Tu, Th 2:00-3:50 (section B)

Instructor: Kurt DeGoede (Professor of Engineering and Physics)
161-B Esbensshade Hall (next to the Hideaway)
Office Phone: 717-361-1380 (anytime)
Text (cell): 717-419-9568
(before 10:00 PM, no messages between 1:00 PM Saturday and 4:00 PM Sunday)
Email: degoedek@etown.edu
Scheduled Office Hours: M 12:30 – 1:50; Tu, F 2-3:20
Or by appointment. Please feel free to stop by my office anytime, if my door is closed please leave a note.

Brenda Read-Daily (Assistant Professor of Engineering)
160-D Esbensshade Hall
Office Phone: 361-1348 (anytime)
Email: readb@etown.edu
Scheduled Office Hours: Tu,Th 12:30 – 1:50; F 2-3:20
Or by appointment. Please feel free to stop by my office anytime, if my door is closed please leave a note.

Course Description:

Introduction to the development of mathematical techniques for engineering applications including MATLAB and statistics. Also, a study of engineering ethics, and written and oral technical communication. Continued exploration of the engineering design process, including a design-and-build project.

Course Outcomes:

Upon Completion of this course, each student should be able to:

1. Use MATLAB to perform basic mathematical operations on scalars, arrays, and matrices, and solve systems of equations, and represent data graphically. (K)
2. Use MATLAB to conduct a statistical analysis on results from the electric car competition. (K)
3. Discuss and debate ethical considerations in engineering practice. (J, I)
4. Discuss contemporary engineering issues and the broad impact of these in a global, economic, environmental, and societal context. (J)
5. Create a resume for an internship. (I)
6. Design and create a professional online portfolio of their work. (I)
7. Use project management techniques to plan and implement a large team project. (C, D)

8. Use computer-aided design software to construct engineering drawing of an object. (K)
9. Plan, construct, and deliver an oral presentation about their design process and results, including a statistical analysis of your performance. (G)
10. Design, draw, mathematically model, and construct an electromechanical device to meet set performance specifications. (C, D)

ABET outcomes addressed:

- K – Students will be proficient with modern tools of engineering including mathematical software and statistics.
- D – Students will be able to manage projects on multidisciplinary teams.
- C – Students will be able to design and construct a solution within constraints.
- J – Students will have an understanding of the field of engineering including contemporary issues and their ethical, global, and societal implications.
- I – Students will display life-long learning with a resume and on-line professional portfolio.

Textbooks:

Engineering Writing by Design: Creating Formal Documents of Lasting Value by Edward J. Rothwell, Michael J. Cloud, CRC Press, 2014.

Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers. Rudra Pratap, Oxford University Press, 2017.

EGR192 2018						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
January						
14	15	16 No Class	17 Intro to Design Process, Conceptual Designs	18	19	20
21	22 Design Processes	23	24 Work Day 1 Concepts	25	26	27
February						
28	29 MATLAB 1	30	31 MATLAB 2 Car tools	1	2	3

Commented [DB1]: Let's discuss the topics we want to cover here in light of the fact that Stuckey did a lot with MATLAB in PHY120.

EGR192 2018

Sun	Mon	Tue	Wed	Thu	Fri	Sat
4	5 Work Day 2	6	7 Work Day 3 Motor/Parts Auction *Everyone should start ordering parts.	8 Project Orders	9	10
11	12 Presentation on Presentations	13	14 Ethics 1 - King for a Day – top down ethics	15 Project Orders	16	17
18	19 Presentations on Design	20	21 Post Presentation Analysis and	22 Project Orders	23	24
March						
25	26 Project Work Day (Fab) *Everyone should order parts by this point.	27	28 Ethics 2 – Case Studies – Ethics in the "trenches"	1 Project Orders	2	3
Spring Break						
11	12 Ethics 3 – Present Ethics Creative Fiction Assignment	13	14 Ethics 4	15 Project Orders	16	17
18	19 Ethics Presentation Videos	20	21 Project Work Day (Fab)	22 Project Orders	23 *Fab Report Due	24
25	26 Ethics Discussion	27	28 Project Work Day (Fab/test) Project Orders	29 Monday Schedule, Professional Development Day – Tina/Linked In	30	31
April						
1	2 No Class	3 Professional Development Day – Tina/Linked In	4 Project Work Day (Test)	5 Project Orders	6	7

EGR192 2018						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
8	9 Project Work Day (Test)	10	11 No Class *Preliminary Testing Report Due	12 Monday Schedule Project Work Day (Test)	13	14
15	16 No Class	17 Project Work Day (Test)	18 Presentation of final car	19	20	21
22	23 SCAD prep for all	24 SCAD	25 Professional Development Day - Resume	26	27	28
May						
29	30 MATLAB 3 functions, read in data	1	2 MATLAB 4 Stats Analysis (Last year's performance data)	3	4	
						WinCalendar

Commented [DB2]: Perhaps use this day to review p-values.

Course Activities:

Participation: Students may be engaged by asking and answering questions or by actively following the lecture and discussion. All students are expected to do assigned exercises during class and lab and may be called on to provide answers or discussion. Students *who routinely miss class, do not work on exercises, talk over the instructor, work on other homework, or use cell phones will not receive the full participation grade.*

You are expected to attend all classes and labs. If you cannot attend one week due to an excused absence (like illness with a doctor's note, an athletic event you have made us aware of previously) you are expected to make up that lab on one of the other days. If you have to switch labs one week, your homework is still due at the start of your assigned lab section.

Homework: will be due as listed on the course Canvas page. These assignments are graded and should represent your own work - *copying another student's work is considered unethical and will result in a failing grade.* You are encouraged to speak to me or to others for guidance, but the work submitted is to be **your** work, not someone else's. The lowest homework grade will be dropped.

Project (Preliminary and Final): Students will work in small groups to design, draw, and fabricate an electromechanical system. Students will also provide a written and oral presentation of their design process, CAD, and fabrication. Each member of the group will evaluate the efforts and contributions of their group members, which will affect a student's individual grade.

Ethics Assignments: As a group you will complete multiple assignments including a creative fiction assignment that is recorded and presented to the class.

Group assignments should represent the efforts of the entire group equally.

Assignments are due at *midnight prior to your scheduled class/lab day.* Submissions are accepted during a 12 hour grace period. After the grace period (noon), late assignments (for any reason) will not be accepted.

Grading:	Preliminary Design	20%
	Ethics Assignments	30%
	Homework/Participation	10%
	Project Assignments, Reports and Performance	40%

Course Grade:

Final grades will be rounded to 3 significant digits with the following scale:

A	93.0	–	100.	Outstanding
A –	90.0	–	92.9	
B +	87.0	–	89.9	
B	83.0	–	86.9	Good
B –	80.0	–	82.9	
C +	77.0	–	79.9	
C	73.0	–	76.9	Acceptable
C –	70.0	–	72.9	
D	60.0	–	69.9	Poor
F	0	–	59.9	Failing

GRADING KEY FOR INDIVIDUAL GRADED ELEMENTS	
10	Full Mastery of Skill
9	Good Mastery
8	Partial Mastery
6	Developing Skill
4	Some progress toward developing this skill
2	Element was attempted

Ethics: Students are to act in accordance with the Pledge of Integrity as stated in the student handbook on all course assignments.

Elizabethtown College is a community engaged in a living and learning experience, the foundation of which is mutual trust and respect, Therefore, we will strive to behave toward one another with civility and with respect for the rights of others, and we promise to represent as our work only that which is indeed our own, refraining from all forms of lying, plagiarizing, and cheating.

All work should represent each student's individual efforts, with the exception of group projects, which should reflect the combined efforts of all members of the group. Students are encouraged to discuss with other students and the instructor, however submitted assignments should represent the individual work of the student.

Any information obtained from any source should be properly referenced. Referencing properly will be an important part of your project reports.

Dishonest practice can result in failure of the course and possibly expulsion from the college. If in doubt, just ask!

Re-Grade: Written requests with full rationale for re-grading of all course-work will be accepted the next class period after original materials are returned.

Disabilities Statement:

Elizabethtown College welcomes otherwise qualified students with disabilities to participate in all of its courses, programs, services, and activities. If you have a documented disability and would like to request accommodations in order to access course material, activities, or requirements, please contact the Director of Disability Services, Lynne Davies, by phone (361-1227) or e-mail daviesl@etown.edu. If your documentation meets the college's documentation guidelines, you will be given a letter from Disability Services for each of your professors. Students experiencing certain documented temporary conditions, such as post-concussive symptoms, may also qualify for temporary academic accommodations and adjustments. As early as possible in the semester, set up an appointment to meet with me, the instructor, to discuss the academic adjustments specified in your accommodations letter as they pertain to my class.

School Closure: In the event that the school is closed during regularly scheduled class time, a virtual learning experience, independent reading, or extra session will be provided to make up for any missed content.

Religious Observance Statement: The College is willing to accommodate individual religious beliefs and practices. It is your responsibility to meet with the class instructor in advance to request accommodation related to your religious observances that may conflict with this class, and to make appropriate plans to make up any missed work.

Fine Print: The above information represents the *intent* of the course and is subject to change at the discretion of the instructors.

NSPE Code of Ethics Cannons, with 2017-18 Etown guidelines and examples.

Hold paramount the safety, health, and welfare of the public. For example:

- ✓ Take training and assignments seriously and approach tasks as learning opportunities.
- ✓ In an internship, take your job seriously and be responsible.
- ✓ Do not try to do something you don't know how to do (For example, don't use the mill machine if you don't know how to work it).

Perform services only in the areas of their competence.

- ✓ Consult someone of higher competence if you are unsure of how to do something (Don't just try to "wing it", figure out how to do it correctly.)
- ✓ Ask for assistance from a more qualified colleague when they are faced with a problem that is beyond their level of capability in a certain area.
- ✓ Consult someone with the necessary knowledge if you are unsure of how to operate certain equipment.

Issue Public Statements only in an objective and truthful manner.

- ✓ Be objective and do not let emotion or opinion affect you.
- ✓ All information should be presented, even if it is not favorable (do not hide anything).
- ✓ Do not embellish or exaggerate skills you do not have on a resume or in social media.
- ✓ When writing a report, all statements should be factually true. Log hours and report outcomes faithfully.

Act for each employer or client as faithful agents or trustees.

- ✓ Put your project teammates or employer's interests before your own.
- ✓ While working as an intern, keep projects/duties/information confidential if employer requests confidentiality.
- ✓ While working in a group, make sure that you do your fair share of work or more.
- ✓ Always talk to group members before making decisions for the group.

Avoid deceptive acts.

- ✓ Do not plagiarize, cite all sources.
- ✓ Do not falsify data.
- ✓ Do not cheat on an exam or homework.
- ✓ Report to the proper authorities anyone believed to be guilty of unethical or illegal practices.

Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.

- ✓ Be willing to own up to your mistakes.
- ✓ Complete all assignments using integrity while following the student code of conduct.
- ✓ Care about your work and take responsibility for your actions and decisions.
- ✓ Conduct themselves in a manner that represents Elizabethtown College or whatever institution at which they are employed in a positive light.

Examples written by Etown Engineering students Classes of 2019-20
Cannons: <https://www.nspe.org/resources/ethics/code-ethics>