ENGR 1010 (Engineering Math Techniques)

Course Syllabus

Course Information

Prerequisites: MATH 1050 and MATH 1060 or MATH 1080

Required Course Materials:

Textbook: Introductory Mathematics for Engineering Applications, Rattan and Klingbeil. As part of course fees, students have already paid to have access to the eBook version of this textbook. Here are instructions Download Here are instructions on how to access this book (there are three different ways). Around the third day of classes, students will receive an email with instructions on how to opt out of the textbook or materials paid for by course fees. If you do this, you will lose access to the material and will be responsible for purchasing the book or access yourself from another source. Students will be able to opt out/opt back in up until the last day to drop classes. After that date no further change can be made.

Course Description:

This course is an application-oriented, hands-on introduction to engineering

mathematics. The course teaches the tools needed to solve problems commonly encountered in the first two years of core engineering courses. All topics are presented within the context of an engineering problem, and are reinforced through extensive examples and computational tools taken from engineering courses.

Learning Outcomes:

- Students will *identify (remember, understand, apply, and analyze)* engineering problems commonly encountered in the first two years of core engineering science. They will then *demonstrate (apply)* how to use using appropriate mathematical tools including algebraic manipulation of engineering equations and formulas, right triangle trigonometry, vectors and complex numbers, sinusoids and harmonic signals, systems of equations and matrices, concepts of differentiation, integration, and differential equations.
- Students will *compare and contrast (understand, apply, and analyze)* why different mathematical techniques are more or less ideal for engineering applications.

- Students will *validate (evaluate)* course concepts using computational tools such as Excel when solving engineering problems.
- Students will *create and verify (evaluate and create)* simple mathematical models to describe engineering problems.

COLLEGE-WIDE LEARNING OUTCOMES

The Core Themes of SLCC's Mission focuses on Access and Success, Transfer Education, Workforce Education and Community Engagement. As such, all courses and programs address one or more of the below College-Wide Learning Outcomes. Upon successful completion of any program at SLCC, students should:

- Acquire substantive knowledge in the discipline of their choice sufficient for further study, and/or demonstrate competencies required by employers to be hired and succeed in the workplace.
- Develop quantitative literacies necessary for their chosen field of study.
- Think Critically.
- Develop the knowledge and skills to be civically engaged, and/or to work with others in a professional and constructive manner.

Course Content:

Schedule: The schedule is posted in CANVAS, but is *tentative*. Students are responsible to be in class so that they know if and when there are changes.

The topics covered in this class include:

- Straight Lines in Engineering
- Quadratic Equations in Engineering
- Trigonometry in Engineering
- Two-Dimensional Vectors in Engineering
- Complex Numbers in Engineering
- Sinusoids in Engineering
- Systems of Equations in Engineering
- Derivatives in Engineering
- Integrals in Engineering
- Differential Equations in Engineering

It is very important that you pay close attention to due dates and starting and ending times of the chapter material. These are clearly shown in the Calendar of Canvas. There is also a discussion forum for every module, and you are highly encouraged to use it frequently.

Course Policies:

Due Dates: All due dates are specified in Canvas and late assignments (Homework, Exams, Quizzes, Project, etc.) will not be accepted.

Academic Dishonesty: Absolutely NOT tolerated and includes all forms of cheating and plagiarism as outlined in the Student Code. **Penalty for first offense will be a grade of "0" on the assignment or exam; second offense will be an "E" for the course.**

All students are responsible for their own work.

Violations include, but are not limited to:

- Cheating on an examination, such as copying from another's paper, using unauthorized notes, calculators, etc., or giving or receiving unauthorized aid, such as trading examinations, whispering answers, passing notes, or using electronic devices to transmit or receive information.
- This is using someone else's work without giving credit. It is, for example, using ideas, phrases, papers, laboratory reports, computer programs, data - copied directly or paraphrased - that you did not arrive at on your own. Sources include published works such as book, movies, Websites, and unpublished works such as other students' papers or material from a research service. In brief, representing someone else's work as your own is academically dishonest. The risk of plagiarism can be avoided in written work by clearly indicating, either in footnotes or in the paper itself, the source of any major or unique idea or wording that you did not arrive at on your own. Sources must be given regardless of whether the material is quoted directly or paraphrased.
- Unauthorized collaboration. This is working with or receiving help from others on graded assignments without the specific approval of the instructor. If in doubt, seek permission from the instructor before working with others. Students are encouraged to learn from one another: Form study groups, discuss assignments, BUT each assignment must be individual work unless specifically stated and turned in as a group assignment.

Copying another student's assignment and putting your name on it is plagiarism. You are encouraged to talk to one another about your assignments; however, all assignments must be done by the student whose name is on it!

Classroom recordings: Students may not record or publish information from the class without written authorization from the instructor. If used without authorization you have violated Privacy/Intellectual Property Rights.

General Behavior: Be respectful of everyone in the class.

Grading:

Exams: There will be 2 - 5 exams during the semester.

Labs: Laboratory exercises are an integral part of this course. The lab meets weekly for two hours. Lab assignments will be taken from course topics and involve computation tools such as Excel. Late assignments are not accepted. If an assignment is submitted online after a grade has been issued a separate email sent to me is required for consideration. If an assignment is handed in after a grade has been issued a separate email and discussion is required for consideration. The last day of the semester (reading day, not finals week) is the deadline to discuss any assignment grades. It is advised that if there are questions about grades then it should be discussed within a day of the date that the grade is issued.

Quizzes: There will be unannounced quizzes throughout the semester.

Homework: The only way to learn this material is practice! Homework assignments are extensive and will require an approximate two-hour commitment per one hour or class time. You are encouraged to work with others, but do not copy their work.

Due Dates: Homework due dates are given in Canvas. Late homework is NOT accepted.

Submission: All homework is to be submitted *electronically ONLY* as a .pdf file.

Homework Grading: You are assigned roughly five problems per chapter.

Homework Structure: Be neat and organized! Being organized will save you time! You will lose points if we cannot clearly follow your work; show methods and clearly box answers!

Grading Scale:

A	93 -100
A-	90-93
B+	87-90
B	83-87
B-	80-83
C+	77-80
C	73-77
C-	70-72
D+	67-70

D	63-67
D-	60-63
E	<60

Other Important Information

- The official Institutional Syllabus for the college is currently found in the left-hand global navigational menu, between the Help icon and the Resources icon. This will continue to link to the most up to date version of the information.
- SLCC has a food pantry for students. Check it out here: https://www.slcc.edu/thaynecenter/programs-services/bruinpantry.aspx
- For childcare assistance, look here: http://www.slcc.edu/childcare/index.aspx
- Please be aware that stress, anxiety, and other mental health issues are extremely common among students and seeking help is very important! Counseling services at SLCC are confidential and low cost. Counseling appointments are $15/session.
  Please contact SLCC Center for Health and Counseling:
  http://www.slcc.edu/chc/Links to an external site.
- If you are having trouble with meeting basic needs, please visit http://www.slcc.edu/student/, or https://www.slcc.edu/fye/housing/crisis-circumstances.aspx ifyou are in crisis. SLCC has a number of resources. Furthermore, if you are comfortable with doing so, please consider notifying your instructor so that she can provide you with any resources she may have access to.

Course Summary:

Date	Details
Sun Aug 25, 2024	Assignment Assignment 1
Sun Sep 1, 2024	Assignment Assignment 2
Sun Sep 8, 2024	Assignment Assignment 3
Sun Sep 15, 2024	Assignment Assignment 4

Date	Details
Sun Sep 22, 2024	Assignment Assignment 5
Tue Sep 24, 2024	Assignment Exam 1 PLO-ENGR-1 PLO-ENGR-2
Sun Sep 29, 2024	Assignment Academic Advisor Meeting (10 PTS EC)
	Assignment Assignment 6
Sun Oct 6, 2024	Assignment Assignment 7
Sun Oct 13, 2024	Assignment Assignment 8a
Sun Oct 27, 2024	Assignment Assignment 8b
Thu Oct 31, 2024	Assignment Exam 2 PLO-ENGR-3 PLO-ENGR-4
Sun Nov 3, 2024	Assignment Assignment 9a
Sun Nov 24, 2024	Assignment Assignment 9b
Sun Dec 1, 2024	Assignment Assignment 10a
Fri Dec 6, 2024	Assignment Lab from 1015
Thu Dec 12, 2024	Assignment Exam 3 Th 130-330