

ENGR 5314
Advanced Engineering Mathematics

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Oracle Hours : Online by arrangement

Textbook : Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, ISBN 978-0470458365.

Grading Breakdown :

Quiz I	15 %
Quiz II	15 %
Homework	40 %
Research Project	30 %
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Total	100 %

General Policies :

- There will be a series of homework assignments over the course of the semester, and the total of your homework scores will count for 40% of the total course grade. Please pay attention to due dates.
- Homework assignments will be administered through HuskyCT. The assignment sheet will be posted there and there will be a “dropbox” where your assignment can be uploaded to. Please complete the assignment on paper and scan (200 dpi, greyscale) prior to uploading.
 - Please show all work on homework solutions; this way, partial credit can be given. Unless otherwise noted, no credit will be given for an answer alone.
 - Late assignments will be accepted but at a penalty of 10% per calendar day late.
 - Homework submissions will not be accepted beginning 1 week after the due date; this is because the solutions will have been posted to HuskyCT by this point.
- Cheating and/or any other form of academic dishonesty will not be tolerated under any circumstances and will be dealt with in accordance with University policy. Everyone is expected to do their own work and submit their own assignment in their own hand.

Course Schedule

There are two “tracks” through this course, depending on your major field of study. If you are in the Masters of Engineering program concentrating in Mechanical, General, or Civil Engineering or in the ME or CE program, you will follow “Track A”. If you are in Computer Science or Electrical and Computer Engineering, or MEng concentrating in ECE, you will follow “Track B”.

<u>Week #</u>	<u>Week of</u>	<u>Track A</u>	<u>Track B</u>	<u>Exams</u>
1	August 29	Unit 1	Unit 1	
2	September 4	Unit 1	Unit 1	
3	September 11	Unit 1	Unit 1	
4	September 18	Unit 2	Unit 2	
5	September 25	Unit 2	Unit 2	
6	October 2	Unit 2	Unit 2	Quiz 1
7	October 9	Unit 3	Unit 3	
8	October 16	Unit 3	Unit 3	
9	October 23	Unit 4	Unit 5	
10	October 30	Unit 4	Unit 5	
11	November 6	Unit 4	Unit 7	Quiz II
12	November 13	Unit 6	Unit 7	
13	November 27	Unit 6	Unit 8	
14	December 4	Unit 6	Unit 8	Research Paper Due

On the next page you’ll find a table describing the topics for the units above as well as the chapters in the Kreyszig textbook that we’ll be covering.

Note that this is a graduate level course and so there is no requirement for a final examination. However, an important part of graduate level studies is individual research. Each student will complete a research paper on a topic relevant to engineering mathematics. More details along with a list of potential topics will be distributed in early October.

Course Topical Outline

<u>Unit Number</u>	<u>Unit Name</u>	<u>Text Chapter(s)</u>
1	Linear Algebra	7, 8
2	Ordinary Differential Equations : Analytical and Numerical Methods	1, 2, 21
3	Special Functions	5+notes
4	Partial Differential Equations : Analytical and Numerical Methods	12, 21
5	Transform Methods : Laplace, z, and Fourier	6, 11, Notes
6	Vectors and Vector Calculus	9, 10
7	Probability Theory	24
8	Elements of Descriptive Statistics	25

Additional References

1. G. Arfken and H. Weber, Mathematical Methods for Physicists, Academic Press, 4th Edition.
2. C. Balanis, Advanced Engineering Electromagnetics, J. Wiley and Sons, 1st Edition.
3. R. Burden, and J. Faires, Numerical Analysis (various editions)
4. P. deRusso, R. Roy, and C. Close, State Variables for Engineers, J. Wiley, 1st Edition.
5. D. Fraser, Statistics : An Introduction, J. Wiley and Sons, 1st edition.
6. M. Greenberg, Advanced Engineering Mathematics, Prentice-Hall, 2nd Edition
7. E. Kamen, Introduction to Signals and Systems, MacMillian, 1987.
8. J. Mathews and R. Walker, Mathematical Methods of Physics, Addison-Wesley, 2nd Ed.
9. D. Zill and W. Wright, Advanced Engineering Mathematics, Jones and Bartlett, 5th Edition.