

AME525 Advanced Engineering Mathematics I, Summer 2016

Time: MW1-4:10
OHE100B
June 29-August 8

Instructor: Charles S. Campbell
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Office Hour: M 12:00-12:55

Text: P.V. O'Neil, Advanced Engineering Mathematics 7th Edition

Grading: Homework: 20%
Final: 80%

Course Outline:

Linear Algebra: Vector spaces, matrices, determinants, Cramer's rule, special matrices, inverse matrix, rank of a matrix, elementary operations, Linear Equations, Gauss-Jordan reduction, solvability of linear equations, linear vector spaces, linear equations and vector space, eigenvalue problem, orthogonalization of vector sets, quadratic forms, equivalent matrices and transformations, Hermitian matrices, multiple eigenvalues of symmetric matrices, functions of symmetric matrices,

Complex Analysis: Complex numbers, limits, complex functions, differentiation, Cauchy-Riemann equations, Integration, complex series, multiple valued functions, Taylor series, Laurent series, residues and their applications, conformal mapping.

Notes:

This is an accelerated class, 15 weeks of work in 6 weeks. That is 2.5 times as hard as a normal Fall/Spring semester class. If you don't have to take this class in the summer, I recommend you take it in the fall or spring. You should allow a full day a week to do the homework.

Topics in class may not be covered by the book or may be handled very differently from the book. I want you to treat your classnotes as your primary text and the assigned text as a reference book. You will be responsible for what is done in class.

Homework will be posted on the class website by Thursday morning and due at the start of class the following Wednesday. No late homework is accepted.

I will be generally be off campus on non-class days but available by email.

Due to the short six week schedule for the summer session, there will be no midterm and the final will be comprehensive for the whole course.

On exams you may use your book, (O'Neil 7th edition only), your classnotes and anything downloaded from the AME525 website, but no other sources. You may not have access to anything electronic including calculators, computers, cellphones, tablets or anything with internet access.

For on-campus students, all electronic devices are to be off during class. I will make an exception for people using tablets to take notes with the understanding that they are only used to take notes.

O'Neil, the author of the textbook and creator of the homework problems assumes that the students have access to modern world tools. (In fact Maple used to be included with the book.) You will not be able to use these on the exams so I recommend you do not use them –except as a last result. But you may run into a tough integral or two which you should be able to solve using the Online Integrator (just google Online Integrator).

The final exam will be on the last scheduled day of class, Monday, August 8.