EM485G Applied Mathematics for Graduate Engineering

United States Naval Academy
Mechanical Engineering Department

Catalog Description: EM485G Applied Mathematics for Graduate Engineering
Credit: 3 (3-0-3)

Designation: Elective, engineering major

Surveys basic methods used to solve ordinary and partial differential equations in common engineering problems (linear algebra, power series, Fourier series, integral transforms, etc). For 1/C engr. majors who plan graduate work in engineering.

Prerequisites: SM212 Differential Equations (grade of B or better)

Corequisites: None

Textbooks: Kreysig, Erwin
Advanced Engineering Mathematics, 9th Edition
Wiley & Sons

Course Director: CAPT Murray Snyder, USN

Course Content:

<table>
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<tr>
<th>No.</th>
<th>Topic or Subtopic</th>
<th>hrs.</th>
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<td>1</td>
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EM485G Applied Mathematics for Graduate Engineering

**Assessment Methods:**

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**Course Outcomes**

1. Introduction to Linux based computing including use of FORTRAN and GNUPLOT. (B,E,H)
2. Use of Separation of Variables. (B,C,E,H)
3. Use of Integrating Factors. (B,C)
4. Use of Fourier Analysis. (B,C)
5. Use of Laplace Analysis. (B,C)
6. Use of Eigenfunction Expansion. (B,C,H)
7. Introduction to Similarity Solutions. (B,C)
8. Use of Bessel Functions, Legendre Polynomials and other Special Functions. (B,C)
9. Linear Algebra. (B,C)
10. Use of Numerical Methods for solving PDEs. (B,E,H)

Letters in parenthesis refer to the assessment methods listed in the previous section.

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**Date of Latest Revision:** 21 May 2010, v