



## APPLIED MATHEMATICS 433 "Mathematical Methods in Physics"

**Calendar Description: H(3-1T)**

Complex analysis and residue integrals. Fourier analysis. Laplace transforms. Vector spaces. Eigenvalues and eigenvectors. Extensive physical applications.

**Prerequisite:** One of Applied Mathematics 307 or 311 or Physics 341; AND One of Applied Mathematics 309 or Mathematics 353 or 331; AND Mathematics 221 or both Mathematics 211 and 113.

### *Syllabus*

<u>Topics</u>	<u>Number of Hours</u>
Matrices: eigenvalue problem, diagonalization, similarity, Cayley-Hamilton, change of basis vectors, rotations, orthogonal and unitary matrices	5
Normal Modes of Oscillating systems	2
Fourier Series and Fourier Integrals, boundary value problems for physical fields	7
Green's Functions	2
Linear Vector Spaces, Linear Operators, Inner product	4
Complex Analysis, Laurent Series, Residues, Cauchy theorem, Evaluation of real integrals by methods of complex analysis	12
Laplace Transforms and applications	4
<b>TOTAL HOURS</b>	<b>36</b>

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