

PHYSICS 400-001 / CRN 73422
APPLICATIONS OF MATHEMATICS IN PHYSICAL SCIENCES

FALL 2009 / Watanabe Hall 114 / MWF, 11:30 AM - 12:20 PM

Instructor

Dr. Chester Vause

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Office Hours: M and W after class, T and Th 11:00 AM-12:00 PM, or by appointment.

Textbook (Required)

Mathematics for Physicists, Susan M. Lea (Thomson-Brooks/Cole, 2004)

Chapters

Textbook Chapters 1-4, 6-8. Omitted sections in chapters to be announced in class. Selected topics in other chapters may be included, time permitting.

Student Learning Outcomes

Among the student learning outcomes of this course are the abilities to:

- a) Apply vector and tensor calculus in the formalism of physical theories
- b) Formulate general linear equations in terms of matrix algebra and the eigenvalue problem as applied in physics
- c) Use complex variables, analytic function theory, and contour integration in the solution of mathematical problems applied to physics
- d) Understand the general mathematical formulation of orthogonal functions resulting from ordinary differential equations used in physics and the relationship to linear algebraic vector spaces

Grade

Homework Problems

Homework problems assigned weekly, typically on Wednesdays, due the following Wednesday (1 week). Selected problems will be graded.

Exams

In-class exams are open textbook, class notes, table of integrals and mathematical formulas, and calculator. Exam dates are:

Exam 1	Friday	September 25, 2009
Exam 2	Friday	October 23, 2009
Exam 3	Friday	November 20, 2009
Final Exam	Friday	December 18, 2009, 12:00PM – 2:00PM

$$\text{Total Score (100\%)} = 64\% \text{ (Exams)} + 36\% \text{ (Homework)}$$

Each Exam is worth 16% of the Total Score ($4 \times 16\% = 64\%$). Each Exam (including the Final Exam) is based on material covered since the previous Exam. Letter grade is determined from the total score according to the following scale:

A- (81%-90%)	A (91%-95%)	A+ (96%-100%)
B- (51%-60%)	B (61%-70%)	B+ (71%-80%)
C- (21%-30%)	C (31%-40%)	C+(41%-50%)
F (0%-10%)	D (11%-20%)	

NO INCOMPLETE GRADE GIVEN