PHYSICS 400 / APPLICATIONS OF MATHEMATICS IN PHYSICAL SCIENCES
FALL 2011 / Watanabe Hall 114 / MWF, 11:30 AM - 12:20 PM

Instructor
Dr. Chester Vause
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Office Hours: To be announced, or by appointment.

Textbook (Required)
<u>Mathematical Methods for Physicists (6th edition)</u>, George B. Arfken and Hans J. Weber (Elsevier Academic Press, Oxford, UK, 2005).

Textbook Chapters
Selected topics in textbook chapters:

6	Functions of a Complex Variable I
7	Functions of a Complex Variable II
15	Integral Transforms
1, 2	Vector / Tensor Analysis / Curved Coordinates
3	Determinants and Matrices
10	Sturm-Liouville Theory-Orthogonal Functions
12	Legendre Functions
13	More Special Functions

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) Use complex variables, analytic function theory, and contour integration in the solution of mathematical problems applied to physics
(b) Apply vector / tensor calculus in the formalism of physical theories
(c) Formulate general linear equations in terms of matrix algebra and the eigenvalue problem as applied in 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

Homework Problems
Suggested problems will be assigned. Students should work these out and keep with their notes. Some problems will be worked out in class. Problems are not to be turned-in.

Exams
Exams are open textbook (no other books), open personal notes, and <u>scientific</u> calculator, only. No internet devices or electronic storage media. Exam dates are:

Exam 1	Friday	September 23, 2011
Exam 2	Friday	October 21, 2011
Exam 3	Friday	November 18, 2011
Final Exam	Friday	December 16, 2011, 12:00PM – 2:00PM

Each Exam is worth 25% of the Total Score (100%). Each Exam (including the Final Exam) is based on material covered since the <u>previous</u> Exam.

Grade Scale
Letter grade is determined from the total score according to the following scale:

A- (86%-90%)	A (91%-95%)	A+ (96%-100%)
B- (61%-70%)	B (71%-80%)	B+ (81%-85%)
C- (31%-40%)	C (41%-50%)	C+ (51%-60%)
	F (0%-20%)	D (21%-30%)

NO INCOMPLETE GRADE GIVEN

NOTICE

No electronic recording of any kind or electronic storage of lectures.

No internet devices (electronic phones, pads, computers, etc.). Turn off your wireless telephones, etc. Do not attend to these during class (no texting, etc.) as such behavior is distracting to the instructor and your classmates.

Be prepared to take the exams in-class as scheduled. This is not negotiable.

This course is a lecture format. I do not take attendance. If you come to class, plan to stay. Excessive coming and going will not be tolerated. If you are late, enter quietly through the back door. Do not disturb the class.