

Phys 481 – Mathematical Physics Fall 2009

Syllabus

Prerequisites: Permission of Instructor.

Textbook: E. Butkov, *Mathematical Physics*.

Reference textbook: F. B. Hildebrand, *Advanced calculus for Applications*.

Class Time and Location: T, Th 1:00 - 2:50 PM; CB 110

Course Instructor: Dr. A.G. Petukhov

Office: 223 EEP

Office Hours: T 3:00-5:00 PM or by appointment

Phone: 394-2364;

E-mail: Andre.Petukhov@sdsmt.edu

WWW: <http://odessa.phy.sdsmt.edu/~andre>

Note: Students with special needs or requiring special accommodations should contact the instructor, Dr. A.G. Petukhov, at 394-2364 and/or the campus ADA coordinator, Jollie McCoy, at 394-1924 at the **earliest** opportunity.

The purpose of this course: is to present mathematical topics of common importance in application of mathematics to variety of physical problems. The course intention is to give students working knowledge of the most widely used mathematical methods along with problem solving skills.

The expected outcomes of this course: Students successfully completing this course will develop a sound understanding and mastery of formulation and solution of mathematical problems in various fields of physics.

Grade Structure:

3 Hour Exams	15 % each	A	> 90 %
Homework/Quiz	25 %	B	90% - 75 %
Final Exam	30 %	C	75% - 60%
		D	60%-50%
		F	<50%

Tentative Lecture Topic Schedule

Week of	Topics
8/31	Vectors, Matrices and Coordinates
9/7	Vectors and Scalar Fields
9/14	Vector Fields in Space
9/21	Functions of complex variables: Complex numbers
9/28	Functions of complex variables: Complex functions
10/5	Functions of complex variables and Exam # 1
10/12	Analytic functions. Cauchy Theorem
10/19	Line Integrals of Complex Functions
10/26	Complex Sequences and Series
11/2	The Residue Theorem and its Applications
11/9	Conformal Mapping and its Applications and Exam #2
11/16	Differential equations
11/23	Series Solutions of Differential Equations
11/30	Series Solutions of Differential Equations and Exam #3
12/7	Applications of Series Solution of Differential Equations
12/14	Final Exam