PHYSICS 5307, Methods in Physics I (Fall 2010)

Schedule: TR, 8:00-9:20 in Sci 112
Instructor: Mahdi Sanati, m.sanati@ttu.edu

Office and office hours: Sci 46, open door policy

Course Objectives: This is a course for graduate and advanced undergraduate students in physics. It is also open to interested students in chemistry, mathematics, and other fields. The purpose of the course is to introduce students to some basic mathematical techniques widely used in physics. The materials are essential for mastering the other graduate core courses like classical mechanics, electrodynamics, and quantum mechanics.

Expected Learning Outcomes: Students will develop the ability to apply mathematics to wide range of physical problems.

Text: “Mathematical Physics”, by Sadri Hassani, Springer-Verlag (1998). We will follow the material from the textbook rather closely, but departures from it occur. Therefore, I encourage you to take notes.

Coverage: Finite-Dimensional Vector Spaces, Infinite-Dimensional Vector Spaces, Matrices and Spectral Decompositions, Complex Analysis, Differential Equations, Sturm-Liouville Systems, Operators in Hilbert Spaces, Green’s Functions, Tensors

Learning Assessment: Certain problems on the exams will explicitly require facility with the course objectives and be used as learning assessments tools.

Homework: Problem sets are assigned for each chapter. Part of these problems will be used in your exams. The grades on your exams reflect how well you can do the homework problems on your own.

Exams: three midterm exams (25% each), final exam (25%)

Grades: 100-A-88, 87.9-B-76, 75.9-C-64, 63.9-D-50, 49.9-F-0

Attendance: Required, except for excused emergencies. Each recorded absence counts as −5% and will be deducted from the course total.

Disability: Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor’s office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.