

# PHYS 605/480: Mathematical Physics I

## MWF 10:00 – 10:50 AM, Physics 107

**Instructor:** Dr. Jason Kestner  
**Office:** Physics 316  
**Office Hours:** M 1:00–2:00 PM, or anytime my door is open  
**Email:** jkestner@umbc.edu  
**Textbook:** Riley, Hobson & Bence, 3rd ed.

### Course Description

This is part of an advanced two-semester sequence that covers the most common mathematical techniques used by physicists. I will assume you are already familiar with linear algebra and ordinary differential equations at the undergraduate level. You are responsible for reviewing these foundations as necessary. In general, it is essential that you study the textbook outside of class, and my lectures are prepared with the expectation that you will do so. Major topics this semester will include linear vector spaces, partial differential equations, Sturm-Liouville theory, and Green's functions techniques. The primary objective of this course is for you, as a physicist, to acquire the basic tools of the trade and recognize how to apply them to real-world problems.

### Assignments

Homework will be assigned weekly. Late homework will generally not be accepted. Your work must be neat and well-organized. Grading is not simply based on whether you got the right answer. It is far more important that you show a clear and logical approach to the problem, even if you are unable to proceed all the way to the final answer.

Individual study is necessary to internalize the concepts, but group study is a good way to overcome roadblocks. However, all submitted work must be your own. Copied or paraphrased work is unacceptable.

You are recommended to solve additional, unassigned problems when possible. “Extra” time that you invest in this course will yield an ample return in the future.

## Exams

There will be two midterm exams and one final exam. The final exam will be cumulative. All exams will be held in class.

## Overall Grades

Your course grade will be determined by the following components:

Homework	20%
Midterm Exam 1	25%
Midterm Exam 2	25%
Final Exam	30%

Total scores translate to grades as:  $[85, 100]\% \rightarrow A$ ,  $[75, 85)\% \rightarrow B$ ,  $[65, 75)\% \rightarrow C$ ,  $[55, 65)\% \rightarrow D$ ,  $[0, 55)\% \rightarrow F$ . This course will not be graded on a curve. Instead, the problems are designed to assess your command of the material such that, as specified in the UMBC Graduate Catalog, an *A* corresponds to “superior” performance, a *B* to “good” performance, a *C* to “not satisfactory,” a *D* to “unacceptable,” and an *F* to “failure.”

## Academic Integrity

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC’s scholarly community in which everyone’s academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory.