PHYS 605/480: Mathematical Physics I
MWF 9:00 – 9:50 AM, Public Policy 206

Instructor:	Dr. Jason Kestner
Office Hours:	W 10-11am, or anytime my door is open.
Email:	jkestner@umbc.edu

Textbook:	Riley, Hobson & Bence, *Mathematical Methods for Physics and Engineering*, 3rd ed.
Other resources:	Lay, *Linear Algebra and its Applications* Youtube series, *The Essence of Linear Algebra* *Linear Algebra*, https://www.math.ucdavis.edu/∼linear/

Course Description

This course 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 (some students have found the "Other resources" above to be useful in reviewing undergraduate linear algebra). Major topics this semester will include linear vector spaces, partial differential equations, Sturm-Liouville theory, and complex variables. 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.

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. I cannot emphasize this enough! Your homework should not be just lines of math – it must be written with interspersed explanation as if you were writing a textbook, wikipedia entry, scientific paper, or etc. You are all scholars now, and your homework must reflect that.

Individual study is absolutely key to internalizing concepts, but consulting others (classmates, me, the internet) is also an essential part of scholarly practice and is a good way to overcome roadblocks. However, all submitted

work must be your own. Copied or paraphrased work is unacceptable. It is fine to use somebody else's idea in your solution, but you must include a citation.

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%

This course will not be graded on a curve. Total scores translate to grades in the following way:

Score	605 grade	480 grade
90–100	A	A
88–90	A-	A
85–88	B+	B
81–85	B	B
78–81	B-	B
75–78	C+	C
71–75	C	C
68–71	C-	C
65–68	D	D
0–65	F	F

Academic Integrity

Academic integrity is a core value at UMBC. 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. Resources for students about academic integrity at UMBC are available at https://academicconduct.umbc.edu/resources-for-students/.

Title IX, Equity, and Inclusion

Federal law mandates notice of the policies available at https://oei.umbc.edu/sample-title-ix-responsible-employee-syllabus-language/.