

Mathematical Methods in Physics
Physics 1373/2373 Fall 2019
Syllabus

Time: Tu & Th, 9:30-10:45 AM

Place: Thaw Hall 11

Instructor: Brian Batell

Office : Allen Hall 401

Email : batell@pitt.edu

Course Website We will use the Pitt CourseWeb site for this course:

<https://courseweb.pitt.edu>

Log in with your University ID and password and navigate to the PHYS 1373/2373 page. Here you will find announcements, lecture notes, homework assignments and solutions, grades, the syllabus, and other important materials. Please check this site regularly for course announcements.

Text: *Mathematical Methods for Physics and Engineering, Third Edition* by K. Riley, M. Hobson and S. Bence, ISBN: 9780521679718, Publisher: Cambridge University Press

Office Hours: 10:45am-12:15pm Tuesdays, 2:30pm-4:00pm Wednesdays. I strongly encourage you to take advantage of office hours. If my office hours do not fit within your schedule for any reason, please email me to set up an appointment to meet outside of these times.

Course Description: This course aims to provide students with a foundation in the mathematical techniques needed in most first year physics graduate courses. Specific topics that will be covered include: Linear algebra and vector spaces, vector calculus, Fourier and Laplace transforms, ordinary and partial differential equations, Sturm-Liouville theory, special functions, complex analysis. basics of tensors and group theory, introduction to probability and statistics.

Learning Objectives: The student should develop facility with basic mathematical methods used in advanced physics and be able to apply these methods to solve a diverse range of physics problems.

Class Participation: Students are expected to attend and participate in class. Each class will involve a mix of lecture, discussion, and one or more student activities. Participation credit will be awarded for these activities.

Homework: Homework will be assigned every 1-2 weeks and will be due the following week. Homework will be graded and solutions to the homework will be made available after all students have turned in the assignment. Late assignments will be accepted if turned in no later than one week after the original due date and will be awarded 50% of the total credit. If there are outstanding circumstances that prevent you from completing the assignment on time, please see me to discuss the matter. I strongly encourage you to discuss the homework problems with your classmates. However, each student must write their own solutions to the homework problems.

Exams: There will be one mid-term exam and one final comprehensive exam during the semester.

Grading: The final letter grade will be awarded according to the weighted credit for class participation (5%), homework (25%), mid-term exam (30%), and final exam (40%) and will be based on the following scale:

90-100%	A ⁺	75-80%	B ⁺	60-65%	C ⁺	45-50%	D ⁺	[<35% F]
85-90%	A	70-75%	B	55-60%	C	40-45%	D	
80-85%	A ⁻	65-70%	B ⁻	50-55%	C ⁻	35-40%	D ⁻	

Difference between PHYS 1373 and PHYS 2373: This course is offered to both undergraduate and graduate students. The homework assignments and exams will differ for students enrolled in PHYS 1373 (undergraduate level) and PHYS 2373 (graduate core course). Each homework assignment will indicate which problems are required for students of PHYS 1373, while the remaining problems are voluntary. Students of PHYS 2373 must complete all problems in the assignment.

Academic Integrity: Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, from the February 1974 Senate Committee on Tenure and Academic Freedom reported to the Senate Council, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz or exam will be imposed. View the complete policy at www.cfo.pitt.edu/policies/policy/02/02-03-02.html.

Disability Services: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 140 William Pitt Union, 412-648-7890/412-624-3346 (Fax), drsrecep@pitt.edu as early as possible in the term. Disability Resources and Services will verify your disability and determine reasonable accommodations for this course. For more information, visit www.studentaffairs.pitt.edu/drsabout.

Statement On Classroom Recording: To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

Student Opinion of Teaching Surveys: Students in this class will be asked to complete a Student Opinion of Teaching Survey. Surveys will be sent via Pitt email and appear on your CourseWeb landing page during the last three weeks of class meeting days. Your responses are anonymous. Please take time to thoughtfully respond as your feedback is important to me. Read more about Student Opinion of Teaching Surveys here: <http://www.cidde.pitt.edu/omet/student-information/>.

Code of Conduct: Communication is key to a productive learning environment, and we can maintain productive communication by exhibiting respect for one another. The success of the course for yourself and others depends on all of our commitment to behavior that demonstrates respect for differences, understanding towards others and a willingness to listen and learn. For these reasons, it is unacceptable to harass, discriminate against, or abuse anyone because of race, ethnicity, gender, disability, religious affiliation, sexual orientation, or age. If you witness or are subject to such harassment, please report it to the instructor or to the Office of Diversity and Inclusion (<https://www.diversity.pitt.edu/make-report>).

Title IX: Legal text: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

As a professor I am a mandatory reporter, and I am required to report violations of Title IX that I observe or am made aware of to the Title IX office (<https://www.titleix.pitt.edu>). Title IX violations include, but are not limited to, sexual harassment, sexual violence and verbal or sexual abuse. Within the classroom, behavior in violation might appear as: suggestive jokes or innuendos, inappropriate touching, and unwanted sexual behavior or advances, but my capacity and obligation to report does not end at the classroom.

If you have any concerns about the course, please do not hesitate to contact me.