

Physics 2600 - Section 01

Foundations of Modern Physics Spring Semester 2025

<i>Room/Time:</i>	<u>Lectures: MWF 12:15 - 1:05pm, Seaver 109</u> (in person). <u>Lab: T 9:55 - 11:35am, Seaver 009</u> (with Mr. Hoemke).	
<i>Instructor:</i>	Dr. Gabriele Varieschi	
<i>Office:</i>	Seaver Hall - 110	
<i>Phone:</i>	(310) 338-7632 (can leave a message)	
<i>E-mail:</i>	gvarieschi@lmu.edu (I will reply by the next day)	
<i>Office hours:</i>	MWF 11:00am - 12:00noon Other times available by appointment.	
<i>Course Webpage:</i>	https://brightspace.lmu.edu/d2l/home/269071 (for all course materials)	
<i>Personal Webpage:</i>	https://gvarieschi.lmu.build	
<i>Required Texts:</i>	David J. Griffiths – Introduction to Electrodynamics – Fourth Edition – Cambridge University Press or Prentice Hall (<u>free pdf book will be posted in Brightspace</u>). We will cover chapter 12 of this book for the introduction to Special Relativity. R. Eisberg and R. Resnik – Quantum Physics – Second Edition – Wiley We will cover chapters 1-4 for the introduction to Quantum Mechanics (<u>free pdf chapters will be posted in Brightspace</u>). Lecture notes will also be available in Brightspace.	
<i>Objectives and Topics:</i>	An introduction to special relativity (SR) and quantum mechanics (QM). Selected topics include (SR) frames of reference, Minkowski diagrams and space time structure, causality, Lorentz transformations, four-vectors and Lorentz invariants, relativistic conservation laws. (QM) failures of classical theory, wave-particle duality, models of the hydrogen atom, emission spectra, the Heisenberg uncertainty principle, wave functions and probability, the Schrodinger equation. Prerequisite: PHYS 2100 or PHYS 2550; MATH 246, or concurrent enrollment. University Core fulfilled: Explorations: Nature of Science, Technology, and Mathematics.	
<i>Learning Outcomes:</i>	Understand the foundations of special relativity and early quantum physics. Conceptually understand the theoretical framework of these fundamental theories and their connections with classical/modern physics. Be able to solve problems of increasing complexity, dealing with the applications of special relativity and quantum physics.	
<i>Tests:</i>	There will be three tests during the semester. They will all count toward your final grade, so please try not to miss any of them.	
<i>Test Dates:</i>	TBA	
<i>Final Exam:</i>	Wednesday, May 14, 11am The final exam is cumulative and equivalent to 2 tests.	
<i>Homework:</i>	Homework assignments will be given, typically one or two for each chapter of the book. Problem sets will be not be graded, but students will present their solutions in class for credit.	
<i>Grading:</i>	Attendance & Homework Presentation	10 %
	Lab Experiments	15 %
	Test 1	15 %
	Test 2	15 %

Test 3	15 %
Final Exam	30 %

Course Grading: **0-50%=F; 50-55%=D; 55-60%=C-; 60-65%=C; 65-70%=C+; 70-75%=B-; 75-80%=B; 80-85%=B+; 85-90%=A-; 90-100%=A.**

Academic Honesty: Academic dishonesty will be treated as an extremely serious matter with severe consequences that can range from receiving no credit for assignments/tests, failing the class, to expulsion. It is never permissible to turn in any work that has not been authored by the student, such as work that has been copied from another student or copied from a source (including Internet) without properly acknowledging the source. It is your responsibility to make sure that your work meets the standard set forth in the “[Academic Honesty Policy](#)”.

Special Accommodations: Students with special needs who require reasonable modifications, special assistance, or accommodations in this course should promptly direct their request to the Disability Support Services (DSS) Office. Any student who currently has a documented disability (ADHD, Autism Spectrum Disorder, Learning, Physical, or Psychiatric) needing academic accommodations should contact the DSS Office (Daum Hall 2nd floor, 310-338-4216) as early in the semester as possible. All discussions will remain confidential. Please visit <http://www.lmu.edu/dss> for additional information.

Syllabus changes: If necessary, this syllabus and its contents are subject to revision; students are responsible for any changes or modifications announced in class.

Have a nice semester. Good luck!