Physics 301

Electromagnetic Fields
Fall Semester 2018

Room:	Seaver Hall 109
Time:	**MW 9:40 - 10:55am**
Instructor:	Dr. Gabriele Varieschi
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Office hours:	MW 2:00 – 3:00 pm; and by appointment.
Web page:	http://gvarieschi.lmu.build/physics_301.html
Required Text:	**David J. Griffiths – Introduction to Electrodynamics – Fourth Edition – Cambridge University Press (or Prentice Hall).** I**SBN-13:** 978-1108420419 **ISBN-10:** 1108420419 (free pdf book can be also found online). We will cover chapters 1-5 of this book in the first semester; we will continue using this textbook during the second semester.
Other useful books:	Your old PHYS 201 textbook (for an elementary introduction to electromagnetism).
(not required)	Reitz, Milford & Christy – Foundations of Electromagnetic Theory – Addison Wesley (another popular undergraduate text). John D. Jackson – Classical Electrodynamics – Wiley (a leading graduate level textbook).
Objectives and Topics:	We will cover several chapters of the textbook in the following order: Part I – Vector analysis: review of vector algebra, differential and integral calculus with vectors, systems of coordinates, Dirac delta function. Part II – The electric field: electrostatics, electric potential, work and energy, conductors, Laplace's equation and other advanced methods, polarization and electric field in matter. Part III – Magnetostatics in vacuum: magnetic field and forces, Biot-Savart law, Ampere's law and magnetic potential.
	Prerequisite: PHYS 201, PHYS 206; MATH 355 or concurrent enrollment.
Learning Outcomes:	Understand the foundations of classical electromagnetism from a more advanced point of view. Conceptually understand the theoretical framework of electromagnetic fields and related Maxwell equations. Be able to solve problems of increasing complexity, dealing with the applications of electromagnetism.
Tests:	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.
Test Dates:	TBA
Final Exam:	Dec. 12, Wednesday – 8:00am-10:00pm The final exam is cumulative and equivalent to 2 tests.

Homework: 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.

Grading:

Class Attendance & Participation	10 %
Homework Presentation	15 %
Test 1	15 %
Test 2	15 %
Test 3	15 %
Final Exam	30 %

Grading (approx.): 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 serious consequences that can range from receiving no credit for assignments/tests to expulsion. It is never permissible to turn in any 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 of academic honesty set forth in the "LMU Honor Code and Process" which appears in the *LMU Bulletin* (see http://bulletin.lmu.edu/)

Americans with Disabilities Act:

Students with special needs as addressed by the Americans with Disabilities Act who need reasonable modifications, special assistance, or accommodations in this course should promptly direct their request to the Disability Support Services Office. Any student who currently has a documented disability (physical, learning, or psychological) needing academic accommodations should contact the Disability Services Office (Daum Hall Room 224, 310-338-4535) as early in the semester as possible. All discussions will remain confidential. Please visit http://academics.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!