PHYS 305: Electromagnetic Theory
FALL 2022

Exploratory Hall, Room L111
Tuesday and Thursday: 12:00 pm - 1:15 pm

Instructor: Yuri Mishin
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Office Hours: 2 - 3 pm (or by appointment) online via Blackboard Collaborate Ultra

Course Description:
Co-requisite: PHYS 260 and PHYS 301.
Interaction of static charges, interaction of stationary currents, electromagnetic induction, and Maxwell's equations.

Course Website: All announcements, homework assignments, solutions and all other information related to the course will be posted on the Blackboard. Go to

https://mymasonportal.gmu.edu/webapps/portal/execute/tabs/tabAction?tab_tab_group_id=_66_1

login with your Mason ID and password, click on the tab "Courses" and find this course. In addition to computer access, consider downloading the mobile application from

https://its.gmu.edu/knowledge-base/how-to-install-the-blackboard-mobile-learn-app/

Textbooks:

Required text:
"Introduction to Electrodynamics" (4th Edition) by David J. Griffiths, Addison-Wesley, 2012.

Recommended supplementary text:
"Div, grad, curl, and all that; an informal text on vector calculus" (4th edition) by H. M. Schey, W.W. Norton and Company, 2004.

Class format:
Lectures will not exactly follow the textbook. They may include some additional material not covered in the textbook, whereas some textbook material will be left for reading at home. You will be expected to know both the lecture material and the relevant chapters from the textbook. Attendance of the lectures is required. Taking class notes is highly recommended.

Grading: Homework = 30%, Midterm exams = 20% each, Final Exam= 30%.

Homework Assignments:
Homework problem sets will be posted on the Blackboard and will be due the following Tuesday in the beginning of the class, i.e., at 12:00 pm (except for the first homework, which will be due in two weeks). Each homework problem will be worth 5 points unless otherwise is indicated. Some homework problems will be given for extra credit. Solutions will be posted on the Blackboard after the due date/time. Please study the solutions, they are an important part of the course. Homework turned in after 12:00 noon on Tuesday will not be accepted. If you cannot come to class to hand in the homework assignment, please make arrangements to hand it in before the due date and time. Alternatively, you can scan your homework (please make sure the scan is perfectly legible and all pages are in a single file) and upload it through the Blackboard in one of the approved formats. The upload should be complete by the due date/time (keep in mind that Blackboard will put a time stamp on your file).

The lowest homework grade will be dropped.

You are encouraged to work on your homework assignments in small groups, but copying homework from each other is not permitted and will be considered cheating (see the Honor Code section below).

Exams:
The Midterm Exams and the Final Exam will be closed-book and without numerical calculators. You will be allowed to use a formula sheet provided by the instructor. The Final Exam will be comprehensive but with greater emphasis on the material covered after the second Midterm Exam.

It is the responsibility of each student to attend classes during the scheduled examinations as listed in this syllabus regardless of work or family circumstances. Make-up exams will only be given to students with a VALID and documented medical excuse. Please contact the instructor as soon as you return to school.

Important advice:
In the homework assignments and exams, please present all steps of the solution in every detail. Even if the final answer is incorrect, you may get partial credit if the problem setup and the general line of solution are correct. No credit will be given for a mere list of answers even if they are correct. Please write legibly: I cannot grade what I cannot read. Typesetting the solutions of the homework problems in Latex, MS Word or Apple Pages will be great but is not required.

Students with disabilities:
If you are a student with a disability and need academic accommodations, please contact the Office of Disability Services (https://ds.gmu.edu) at 703.993.2474. All academic accommodations must be arranged through that office. Students must inform the instructor in the beginning of the semester, and the specific accommodation will be arranged through the ODS.

GMU Diversity Statement:

http://ctfe.gmu.edu/professional-development/mason-diversity-statement/

Academic Integrity:
GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process.

GMU Honor code:
https://catalog.gmu.edu/policies/honor-code-system/#text

Honor Code: To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this honor code: Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.

Tentative schedule of the course:

Chapter 1: Vector Analysis
August 23, 25, 30

Chapter 2: Electrostatics
September 1, 6, 8, 13, 15

Chapter 3: Potentials
September 20, 22, 27, 29; October 6

Exam 1: October 4

Chapter 4: Electric fields in matter
October 13, 18, 20

Chapter 5: Magnetostatics
October 25, 27, 30

Exam 2: November 1

Chapter 5: Magnetostatics (continued)
November 3, 8, 10

Chapter 6: Magnetic fields in matter
November 15, 17, 22 (November 24 - Thanksgiving recess)

Chapter 7: Electrodynamics
December November 29, December 1

Final exam:
December 8, 10:30-1:15 pm