

Electromagnetism
01:750:385
Fall 2020

Instructor: Sevil Salur (current instructor)

Summary: An intermediate level course in electromagnetism. Topics include Gauss's Law, electric potential and work, Laplace equation, method of images, multipole expansion, electric fields in matter and polarization, dielectrics, magnetostatics, Bio-Savart Law, Ampere's Law, magnetic vector potential, field of magnetized objects.

This course is intended for Professional and Astrophysics majors. Students in the General and Applied options should consider 01:750:324.

Pre-requisites: 01:750:227 or 01:750:272 and 01:640:251 (Calc 3) B or better strongly suggested in all courses. Students in the General and applied options should consider 01:750:324.

Co-requisites: none

Meeting times: Two 80 minute lectures per week.

Lecture: M-Th 3 (12:00-1:20 pm)

Recitations: None

Text: Griffiths, Introduction to Electrodynamics, Fourth Edition.

LMS: Sakai

Provisional Plans for Remote Instruction:

1. Lectures will be conducted synchronously. The recording of the lectures, slides and additional notes will be posted to Sakai.
2. Homeworks will be assigned at least one week prior to the due date. Students are expected to upload their homework assignments to Sakai.
3. Quizzes, midterm and the final exams will be conducted in take-home style. Students are expected to scan and upload their exams to Sakai by the due date.
4. Office hours: Will be held remotely. It will be scheduled during the most preferred hour after polling students. Additional meeting times with one-to-one or more students will be scheduled by demand to accommodate those who cannot make the scheduled weekly office hour.

Technology requirements: Students are expected to attend lectures via their computers with a working microphone. Students also will need either physical scanners or mobile device applications that they can use with their hand-held device cameras to be able to scan their work for exams, quizzes, and homeworks in high resolution pdf format.

Provisional Grading Plans:

Class participation: 5%

Quizzes (5 in total): 25%

Homeworks (10 in total): 25%

One Take-Home style Mid-term: 15%

Take Home Final Exam: 30%

Schedule (provisional):

Week:	Topic
1	Electrostatics and electric fields
2	Electric fields, vector analysis, Gauss's Law
3	Gauss's Law, electric potential
4	Electric potential, work and energy
5	Conductors, capacitance, Laplace Equation
6	Uniqueness of solutions, method of images
7	Separation of variables
8	Exam, multipole expansion
9	Electric fields in matter, polarization
10	Polarization induced fields, the D field
11	Linear dielectrics, magnetostatics, currents
12	Bio-Savart Law, curl and divergence of B
13	Ampere's law, Magnetic vector potential
14	Magnetization, the field of magnetized objects

Academic Integrity:

Students are expected to maintain the highest level of academic integrity. You should be familiar with the university policy on academic integrity: <http://academicintegrity.rutgers.edu/academic-integrity-policy/> Violations will be reported and enforced according to this policy.

Use of external sources to obtain solutions to homework assignments or exams is cheating and is a violation of the University Academic Integrity policy. Cheating in the course may result in penalties ranging from a zero on an assignment to an F for the course to expulsion from the University. Posting of homework assignments, exams, recorded lectures, or other lecture materials to external sites without the permission of the instructor is a violation of copyright and constitutes a facilitation of dishonesty, which may result in the same penalties as explicit cheating.

Not only does the use of such sites violate the University's policy on Academic Integrity, using such sites interferes with your achievement of the learning you are paying tuition for. Assignments, quizzes, and exams are given not simply to assign grades, but to promote the active learning that occurs through completing assignments on your own. Getting the right answer is much less important than learning how to get the right answer. This learning is critical to your success in subsequent courses and your careers.

Student wellness Services

Student Counseling, ADAP & Psychiatric Services (CAPS) wellness for non-emergency psychological health issues services (848) 932-7884, 17 Senior Street, New Brunswick, NJ 08901

<http://health.rutgers.edu/medical-counseling-services/counseling/>

Violence Prevention & Victim Assistance (VPVA), (848) 932-1181, 3 Bartlett Street, New Brunswick, NJ 08901, <http://www.vpva.rutgers.edu/>

Office of Disability Services (848) 445-6800, Lucy Stone Hall, Suite A145, Livingston, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854, <https://ods.rutgers.edu/>

Scarlet Listeners for confidential peer counseling and referral hotline, (732) 247-5555, <http://www.scarletlisteners.com>