

PHYS 607
Electromagnetic Theory

Spring 2026

INSTRUCTOR: Dr. Alexander Senichev
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CLASS TIME AND DATES: Tue and Thu, 8:30 AM – 9:45 AM
Sondheim Hall 107
First Day of Classes: Jan 26
Last Day of Classes: May 12
Spring Break: March 14-22, No classes
Midterm I: Feb. 26
Midterm II: April 9
Final Exam: TBD

OFFICE HOURS: Thursday, 12:00 PM – 1:00 PM (tentative)

Required Textbooks: A. Zangwill, *Modern Electrodynamics*

Other Resources: J. D. Jackson, *Classical Electrodynamics*
D. J. Griffiths, *Introduction to Electrodynamics*

Grading:

Homework	20%
Quizzes	10%
Midterm Exam I:	20%
Midterm Exam II:	20%
Final Exam:	30%

91 ≤ A < 100
88 ≤ A- < 91
85 ≤ B+ < 88
81 ≤ B < 85
78 ≤ B- < 81
75 ≤ C+ < 78
71 ≤ C < 75
65 ≤ C- < 71
60 ≤ D < 65
0 ≤ F < 60

Course Overview and Objectives

This course covers the general content of Chapters 1-15 in *Modern Electrodynamics* by Zangwill. You will learn to formulate and solve electromagnetic problems using Maxwell's equations, vector calculus, and operator methods, and to calculate electric and magnetic fields in various physical scenarios. *Introduction to Electrodynamics* by Griffiths may be consulted as a supplementary reference for foundational concepts. Emphasis is placed on developing rigorous analytical reasoning and problem-solving skills appropriate for graduate-level study.

COURSE STRUCTURE AND EXPECTATIONS

Communication

All course emails must include “PHYS 607” in the subject line.

Classroom Environment

To make lecture time effective for everyone, please silence and put away phones and other electronic devices during class. This minimizes distractions and helps everyone stay focused. Questions are encouraged and expected. If something is unclear, say so. Interrupting with a question improves the lecture for everyone.

Homework

Homework is assigned weekly and is due Thursday in class. Late homework is not accepted. Your lowest homework score will be dropped to allow for occasional setbacks. Reading the relevant sections of the textbook is considered part of the homework. You are responsible for material in the assigned reading, whether or not it is explicitly covered in lecture.

Collaboration and Academic Integrity

Collaboration, discussion, and working through ideas together is encouraged. At the same time, it is essential that your submitted work reflects your own understanding and reasoning. To balance these goals, the following approach is strongly suggested:

- Start each problem on your own and make a serious attempt
- Discuss ideas and strategies with others
- Write up your final solution independently, in your own words and notation.

Use collaboration to clarify ideas, not to replace independent problem-solving.

Quizzes and Exams

All quizzes and exams are in-class and are designed to assess understanding. Phones, calculators, computers, tablets, and smart devices must be turned off and put away during quizzes and exams. These policies ensure fairness and allow assessment of conceptual understanding and analytical reasoning.

Statement on Generative AI Tools

In this course, permission to use generative AI tools varies by assignment. For some assignments, AI tools are permitted and must be clearly cited, including the tool, prompts, and the nature of their contribution. For other assignments, AI use may be limited or entirely prohibited to support your growth as a writer and thinker. When AI tools are not permitted, their usage will be treated as an academic integrity issue. If an assignment does not specify whether AI use is permitted, you should assume that you are expected to complete the work independently without AI assistance. When in doubt about whether a tool or its usage is acceptable, please ask me. The intent is for AI to support your learning, not replace it.

ACADEMIC HONESTY POLICY

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community, in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory. [Statement adopted by UMBC's Undergraduate Council and Provost's Office.]

Accessibility and Disability Accommodations, Guidance and Resources (required)

Accommodations for students with disabilities are provided for all students with a qualified disability under the Americans with Disabilities Act (ADA & ADAAA) and Section 504 of the Rehabilitation Act who request and are eligible for accommodations. The Office of Student Disability Services (SDS) is the UMBC department designated to coordinate accommodations that creates equal access for students when barriers to participation exist in University courses, programs, or activities.

If you have a documented disability and need to request academic accommodations in your courses, please refer to the SDS website at sds.umbc.edu for registration information and office procedures.

SDS email: disAbility@umbc.edu

SDS phone: 410-455-2459

If you will be using SDS approved accommodations in this class, please contact the instructor to discuss implementation of the accommodations. During remote instruction requirements due to COVID, communication and flexibility will be essential for success.

Sexual Assault, Sexual Harassment, and Gender Based Violence and Discrimination (required)

UMBC Policy in addition to federal and state law (to include Title IX) prohibits discrimination and harassment on the basis of sex, sexual orientation, and gender identity in University programs and activities. Any student who is impacted by sexual harassment, sexual assault, domestic violence, dating violence, stalking, sexual exploitation, gender discrimination, pregnancy discrimination, gender-based harassment, or related retaliation should contact the University's Title IX Coordinator to make a report and/or access support and resources. The Title IX Coordinator can be reached at titleixcoordinator@umbc.edu or 410-455-1717.

You can access support and resources even if you do not want to take any further action. You will not be forced to file a formal complaint or police report. Please be aware that the University may take action on its own if essential to protect the safety of the community.

If you are interested in making a report, please use the Online Reporting/Referral Form. Please note that, if you report anonymously, the University's ability to respond will be limited.

Notice that Faculty and Teaching Assistants are Responsible Employees with Mandatory Reporting Obligations

All faculty members and teaching assistants are considered Responsible Employees, per UMBC's Policy on Sexual Misconduct, Sexual Harassment, and Gender Discrimination. Faculty and teaching assistants therefore required to report all known information regarding alleged conduct that may be a violation of the Policy to the Title IX Coordinator, even if a student discloses an experience that occurred before attending UMBC and/or an incident that only involves people not affiliated with UMBC. Reports are required regardless of the amount of detail provided and even in instances where support has already been offered or received.

While faculty members want to encourage you to share information related to your life experiences through discussion and written work, students should understand that faculty are required to report past and present sexual harassment, sexual assault, domestic and dating violence, stalking, and gender discrimination that is shared with them to the Title IX Coordinator so that the University can inform students of their rights, resources, and support. While you are encouraged to do so, you are not obligated to respond to outreach conducted as a result of a report to the Title IX Coordinator.

If you need to speak with someone in confidence, who does not have an obligation to report to the Title IX Coordinator, UMBC has a number of Confidential Resources available to support you:

Retriever Integrated Health (Main Campus): 410-455-2472; Monday – Friday 8:30 a.m. – 5 p.m.; For After-Hours Support, Call 988.

Center for Counseling and Well-Being (Shady Grove Campus): 301-738-6273; Monday-Thursday 10:00a.m. – 7:00 p.m. and Friday 10:00 a.m. – 2:00 p.m. (virtual) Online Appointment Request Form

Pastoral Counseling via The Gathering Space for Spiritual Well-Being: 410-455-6795; i3b@umbc.edu; Monday – Friday 8:00 a.m. – 10:00 p.m.

Other Resources

Women's Center (open to students of all genders): 410-455-2714; womenscenter@umbc.edu; Monday – Thursday 9:30 a.m. – 5:00 p.m. and Friday 10:00 a.m. – 4 p.m.

Shady Grove Student Resources, Maryland Resources, National Resources.

Child Abuse and Neglect

Please note that Maryland law and UMBC policy require that faculty report all disclosures or suspicions of child abuse or neglect to the Department of Social Services and/or the police even if the person who experienced the abuse or neglect is now over 18.

Pregnant and Parenting Students

UMBC's Policy on Sexual Misconduct, Sexual Harassment and Gender Discrimination expressly prohibits all forms of discrimination and harassment on the basis of sex, including pregnancy. Resources for pregnant, parenting and breastfeeding students are available through the University's Office of Equity and Civil Rights. Pregnant and parenting students are encouraged to contact the Title IX Coordinator to discuss plans and ensure ongoing access to their academic program with respect to a leave of absence – returning following leave, or any other accommodation that may be needed related to pregnancy, childbirth, adoption, breastfeeding, and/or the early months of parenting.

In addition, students who are pregnant and have an impairment related to their pregnancy that qualifies as disability under the ADA may be entitled to accommodations through the Office of Student Disability Services.

Religious Observances & Accommodations

UMBC Policy provides that students should not be penalized because of observances of their religious beliefs, and that students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. It is the responsibility of the student to inform the instructor of any intended absences or requested modifications for religious observances in advance, and as early as possible. For questions or guidance regarding religious observances and accommodations, please contact the Office of Equity and Civil Rights at ecr@umbc.edu.

Hate, Bias, Discrimination and Harassment

UMBC values safety, cultural and ethnic diversity, social responsibility, lifelong learning, equity, and civic engagement.

Consistent with these principles, UMBC Policy prohibits discrimination and harassment in its educational programs and activities or with respect to employment terms and conditions based on race, creed, color, religion, sex, gender, pregnancy, ancestry, age, gender identity or expression, national origin, veterans status, marital status, sexual orientation, physical or mental disability, or genetic information.

Students (and faculty and staff) who experience discrimination, harassment, hate, or bias based upon a protected status or who have such matters reported to them should use the online reporting/referral form to report discrimination, hate, or bias incidents. You may report incidents that happen to you anonymously. Please note that, if you report anonymously, the University's ability to respond may be limited.