Ball State University
Course Syllabus for Electrodynamics (PHYC 673)
Spring 2026

Lecture: MWF 9:00 AM – 9:50 AM, Cooper Science Building 401

Instructor: Dr. Michael J. Skoby
mjskoby@bsu.edu
Office: CS 430B

Office Hours (subject to change):

Tuesday 2:30 PM – 3:30 PM
Thursday 10:00 AM – 11:00 AM
Friday 1:00 PM – 2:00 PM
Or by appointment

Catalog Description:

Advanced mathematical techniques for solving problems in electrostatics and magnetostatics; fundamental concepts of electrodynamics. Applications to electromagnetic fields in matter, waves, and radiation. Prerequisite: PHYC 450, 550 or equivalent.

Required Materials:

Zangwill, Andrew *Modern Electrodynamics*. Cambridge University Press, 2013

Course Objectives:

- Apply basic principles of electromagnetism to analyze physical systems, including conductors, capacitors, wave guides, and current distributions.
- Apply boundary value techniques, Green's functions, and computational methods to solve electromagnetism problems in a variety of geometries.
- Develop student skill with mathematical tools of theoretical physics and professional habits of problem-solving needed for success in a doctoral program.

Course Grading:

Your final grade will be weighted as follows:

In-class Exercises:	10%
Homework:	40%
Exam 1:	15%
Exam 2:	15%
Final Exam:	20%

Below is the grading scale. The letter grade thresholds may be lowered at the instructor's discretion, but the thresholds will not be raised. For example, if you get at least 90% you will be guaranteed to receive an A- or possibly better.

A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	63-66%
D-	60-62%
F	Below 60%

In-class Exercises:

From time-to-time you will attempt to solve problems or complete other exercises during class. Please be prepared to show your work for in-class exercises and possibly hand it in at the end of class.

Homework:

Homework problems will generally be assigned for each lecture and the due date will be given once all the problems for a homework set have been assigned. You are encouraged to discuss the homework with others, but each student must do their own work. Solutions copied from any source (online, classmates, etc.) will not be accepted. Late homework will not be accepted.

Please follow these guidelines when writing your homework solutions:

- Solutions must be legible, organized, and logical. No scratch work, nothing scribbled out or crossed out. Please don't try to cram everything into as little space as possible. Don't be afraid to use lots of paper.
- You must cite or show how you got an equation (please don't just say "the notes", include the date and context). You don't have to cite general equations

(e.g. Maxwell's equations, conservation of energy, conservation of momentum, etc.), but you should label them in your solutions.

- Show all steps to the solution including the algebra. Students that show the fewest number of steps tend to be the ones that make the most mistakes.
- Don't assume that I'll assume you understand what you're doing. Include concise explanations of your solution.
- Draw a box around your final answer(s).

Exams:

The date and material covered on the exams will be confirmed a week before the exam.

Final exam: Friday, May 1 at 7:30 AM to 9:30 AM

Attendance:

Students are expected to be present for the entirety of every lecture. Only exceptional cases (e.g. illness), *for which you notify the instructor before missing class*, will be considered excused. You may be required to provide the instructor with documentation for an excused absence. Students who miss class are still responsible for homework assigned and all material covered in class.

University Statement:

We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse.

Disability Statement:

If you need course adaptations or accommodations because of a disability, please contact the instructor of record as soon as possible. Ball State's Disability Services Office coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or dsd@bsu.edu.

Academic Dishonesty:

"To maintain its credibility and reputation, and to equitably assign evaluations of scholastic and creative performance, Ball State University is committed to maintaining a climate that upholds and values the highest standards of academic integrity." Refer to the following BSU web site for more information:
https://www.bsu.edu/about/administrativeoffices/vice-provost/student-services/academic-integrity

We will not have class on the following days:

Monday, January 19 (Martin Luther King, Jr. Day)
Monday, March 2 (Spring Break)
Wednesday, March 4 (Spring Break)
Friday, March 6 (Spring Break)

Disclaimer:

This syllabus is subject to change.