

PHYS 320: ELECTRICITY AND MAGNETISM I

SYLLABUS (2020 Fall)

Department of Physics, Southern Illinois University–Carbondale

Last updated: October 21, 2020

1 General information:

Instructor: K. V. Shajesh

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Zoom Meeting ID: [934 4515 4889](https://siu.zoom.us/j/93445154889)

Web-page: <http://www.sphics.com>

Class meetings: MWF 2:00-2:50 PM, in Neckers 410.

Office hours: MTWF 3:00-4:00 PM; W 11:00 AM-1:00 PM.

2 Prerequisites:

Completed PHYS 203B or equivalent, and either completed or concurrently taking PHYS 301. An aptitude for abstract description of natural phenomena using mathematics will be necessary for the course. Familiarity with the following topics will be assumed: vectors, complex numbers, differential and integral calculus, matrices and determinants, eigenvalue problems, elementary differential equations. Exposure to Maxwell's equations in integral form will be assumed.

Completion of PHYS 205A, PHYS 205B, and MATH 251 with grade of C or better, and PHYS 301, or MATH 305, or concurrent enrollment, is an official prerequisite for the course.

3 Course description

Textbook

Introduction to Electrodynamics, 4th Edition, by David J. Griffiths.

The course will broadly cover the first six chapters of the textbook. We will begin with an introduction to vector calculus. Maxwell's equations in differential form will be introduced early. Techniques to determine static electromagnetic fields (electrostatics and magnetostatics) in presence of charges and currents, dielectric and permeable materials, and conductors, will be introduced.

References

1. *Classical Electrodynamics*, by J. Schwinger, L. L. DeRaad, Jr., K. A. Milton, and Wu-yang Tsai.
2. *Electromagnetic Theory*, by J. A. Stratton.
3. *Classical Electrodynamics*, by J. D. Jackson.

Webpage

Relevant notes and homework will be posted at

<http://www.sphics.com/tc/202008-SIU-P320/>.

It is advisable to download relevant materials to your computer, because the website (or the Internet) could be occasionally down.

Lectures

Lectures will be delivered on Zoom during the scheduled class periods. The lectures will be recorded using a web camera and the recording feature in Zoom. These recordings will be made available on YouTube as ‘Unlisted’ videos. These videos will not be public in the sense that it will not show up under a search, but anyone with the link to the video can access it.

4 Course work

Evaluation

Homework	30 %
Midterm Exams ($3 \times 15 \%$)	45 %
Extra Credit Work	5 % and y in Eq. (1)
Final Exam	20 %

Homework

Homework will be assigned roughly every week. It will be available on the course webpage. Students are encouraged to discuss homework problems with their classmates, instructor, or anyone. But, each student should submit their own work describing detailed steps of thought process.

Exams

Four examinations (including the final exam) will be administered.

Midterm Exam 1	Spetember 11 (Friday, in class)
Midterm Exam 2	October 9 (Friday, in class)
Midterm Exam 3	November 6 (Friday, in class)
Final Exam	December 11 (Friday, 2:45-4:45 PM)

The exams will assess you on concepts covered in lectures and homework. Midterm exams will be administered in class. All the exams will be cumulative, but you are recommended to concentrate more on topics covered in the later part of the semester.

Grading

The grading will be done on a scale of 0-100. This Raw Score x (out of 100) should be used to assess your knowledge in the subject. The raw score will be converted to the university scale using the following formula for Your Score x' ,

$$x' = x + ay(100 - x), \quad (1)$$

where $0 \leq a \leq 1$ is the curve parameter chosen by the instructor and $0 \leq y \leq 1$ is determined by your score in Extra Credit submissions (out of 1.00). For example, for $a = 0.50$ and $y = 0.75$, a Raw Score of 60 will lead to Your Score of 75.

5 Syllabus Attachment

The Provost Office has created a ‘Syllabus Attachment’ to assist the student. It lists and provides web links for many elements that are important for a student. Kindly find it attached.

Syllabus Attachment

Fall 2020

MISSION STATEMENT FOR SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

SIU embraces a unique tradition of access and opportunity, inclusive excellence, innovation in research and creativity, and outstanding teaching focused on nurturing student success. As a nationally ranked public research university and regional economic catalyst, we create and exchange knowledge to shape future leaders, improve our communities, and transform lives.

IMPORTANT DATES

Semester Classes Begin:08/17/2020
Last day to add full-term course (without Dean's signature):08/23/2020
Last day to withdraw from the University with a full refund:08/28/2020
Last day to drop a full-term course for a credit/refund:08/30/2020
Last day to drop a full-term course (W grade, no refund):10/25/2020
Final examinations:12/07–12/11/2020

Note: Please verify the above dates with the Registrar calendar and find more detailed information on deadlines at <http://registrar.siu.edu/calendars>. For add/drop dates that apply to shorter-than-full-term courses, please look at the Schedule of Classes search results at <http://registrar.siu.edu/schedclass/index.php>

FALL SEMESTER HOLIDAYS

Labor Day Holiday 09/07/2020
Election Day 11/03/2020
Veterans Day 11/11/2020
Thanksgiving Break 11/21-11/29/2020

DIVERSITY

Southern Illinois University Carbondale's goal is to provide a welcoming campus where all of our students, faculty and staff can study and work in a respectful, positive environment free from racism and intimidation. For more information visit: <http://diversity.siu.edu>

DISABILITY SUPPORT SERVICES

SIU Carbondale is committed to providing an inclusive and accessible experience for all students with disabilities. Disability Support Services coordinates the implementation of accommodations. If you think you may be eligible for accommodations but have not yet obtained approval please contact DSS immediately at 618-453-5738 or [disabilityservices.siu.edu](mailto:disabilityservices@siu.edu). You may request accommodations at any time, but timely requests help to insure accommodations are in place when needed. Accommodations and services are determined through an interactive process with students and may involve consideration of specific course design and learning objectives in consultation with faculty.

MILITARY COMMUNITY

There are complexities of being a member of the military community and also a student, and military and veteran related developments can complicate academic life. If you are a member of the military community and in need of accommodations please visit Veterans Services at <http://veterans.siu.edu/>

STUDENT MULTICULTURAL RESOURCE CENTER

The Student Multicultural Resource Center serves as a catalyst for inclusion, diversity and innovation. As the Center continues its work, we are here to ensure that you think, grow and succeed. We encourage you to stop by the Center, located in the Student Services Building Room 140, to see the resources available and discover ways you can get involved on the campus. Visit us at <https://smrc.siu.edu/>

SALUKI CARES

The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For information on Saluki Cares: Call (618) 453-2461, email siucares@siu.edu, or <http://salukicare.siu.edu/>

SAFETY AWARENESS FACTS AND EDUCATION

Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: <http://safe.siu.edu>

MORRIS LIBRARY HOURS: <http://libguides.lib.siu.edu/hours>

ADVISEMENT: <http://advisement.siu.edu/>

SIU ONLINE: <https://online.siu.edu/>

COVID-19

As a condition of on-campus enrollment, all SIUC students are required to engage in safe behaviors to avoid the spread of COVID-19, including the requirement that all students wear a mask in campus buildings, including classrooms, laboratories, and studios when others are present, regardless of social distancing. Students are expected to follow physical or social distancing guidelines by keeping at least 6 feet from others, and practicing good hand hygiene. Failure to comply with this policy may result in dismissal from the current class session. If the student refuses to leave the classroom after being dismissed, the student may be referred to the Office of Student Rights and Responsibilities. SIUC will follow federal, state and county public health recommendations and mandates in all decisions relating to university operation. Students should regularly review the link for the [SIUC COVID-19 response](#).

Masks for residential students will be furnished upon move-in to their residence hall rooms. Off-campus students can pick up a mask at the Student Center ID Office, the Student Services Building main desk, the check-in desk at the Student Health Center, the equipment desk at the Student Recreation Center, the Dean of Students Office and at the circulation desk of Morris Library. Students will need to show their student IDs to claim their masks. A limited number of masks will be available in the academic deans' offices. All questions can be directed to the Dean of Students Office. Email: DOS@siu.edu Phone #: 453.2461

WITHDRAWAL POLICY ~ Undergraduate only

Students who officially register for a session must officially withdraw from that registration in a timely manner to avoid being charged as well as receiving a failing grade for those classes. An official withdrawal must be initiated by the student, or on behalf of the student through the academic unit, and be processed by the Registrar's office. For the proper procedures to follow when dropping courses and when withdrawing from SIU visit: <http://registrar.siu.edu/students/withdrawal.php>

SIU's EARLY WARNING INTERVENTION PROGRAM (EWIP)

Students enrolled in courses participating in SIU's Early Warning Intervention Program might be contacted by University staff during a semester. More information can be found at the Core Curriculum's Overview webpage: <http://corecurriculum.siu.edu/program-overview/>

EMERGENCY PROCEDURES

We ask that you become familiar with **Emergency Preparedness @ SIU**. Emergency response information is available on posters in buildings on campus, on the Emergency Preparedness @ SIU website, and through text and email alerts. To register for alerts visit: <http://emergency.siu.edu/>

CATALOGS

catalog.siu.edu

gradcatalog.siu.edu

Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please refer to the graduate catalog .

CENTER FOR LEARNING AND SUPPORT SERVICES

Tutoring : <http://tutoring.siu.edu/>

Math Labs <http://math.siu.edu/courses/course-help.php>

WRITING CENTER

<http://write.siu.edu/>

PLAGIARISM

See the Student Conduct Code <http://srr.siu.edu/student-conduct-code/>

INCOMPLETE POLICY~ Undergraduate only

<http://registrar.siu.edu/grades/incomplete.php>

REPEAT POLICY

<http://registrar.siu.edu/students/repeatclasses.php>