

PHYS 203B-001: COLLEGE PHYSICS

SYLLABUS (Spring 2022)

Department of Physics, Southern Illinois University–Carbondale

Last updated: January 10, 2022

1 General information:

Instructor: K. V. Shajesh

Office: Neckers 491, Tel.: +1-618-453-5212.

Email: shajesh@siu.edu

Zoom Meeting ID: [934 4515 4889](#)

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

Class meetings: MWF 10-10:50 AM, in Neckers 440.

Office hours: MWF 1:00-3:00 PM.

2 Prerequisites:

Conceptual understanding of the natural phenomena described in this course usually requires a good mathematical background. A strong aptitude for algebra and basic mathematical techniques will be necessary for the course. The following is a partial list of the necessary mathematical techniques: Algebra, Geometry, Trigonometry, Vector algebra, Solutions of simultaneous equations, Significant figures.

Completing PHYS 203A is an official prerequisite for the course. Remember that MATH 109 or 111 or 125 or 140 or 150, with a grade C or better, was a prerequisite for PHYS 203A.

3 Course description

The course will broadly cover the topics of Electricity and Magnetism, Light and Optics, and Modern Physics. These are covered in the final fifteen chapters of the textbook. We will cover a fair amount in the limited time.

Electricity and Magnetism involves the study of interactions of electrically charged materials. We will, in particular, study the unification of electricity and magnetism first observed by Michael Faraday and formulated in the Maxwell equations.

Light, and electromagnetic waves in general, is understood as oscillations of electric and magnetic fields. We will study the behavior of light in the context of geometrical optics, which are known as laws of reflection and refraction.

Electricity and Magnetism of Maxwell's equations predicted that the speed of light is a constant, and led to the development of Theory of Relativity and Quantum Mechanics. We shall explore these developments under Modern Physics.

Textbook

The following is the assigned textbook for the course:

Physics,
J. D. Cutnell, K. W. Johnson, D. Young, and S. Stadler,
10th Edition, Wiley.

An older edition of the assigned textbook, or most of the similar textbooks in the market, should be sufficient for the course. Openly licensed textbooks are also decent substitutes for the assigned textbook, for example,

OpenStax College, College Physics. OpenStax College. 21 June 2012.

This publication is licensed under a Creative Commons License 4.0 International. The electronic copy of the textbook is available for free at <https://openstax.org/details/books/college-physics>. A professionally printed copy of the publication is available in the market for about 47 dollars.

Web-page

Relevant notes, homework, and quizzes, will be posted at

<http://www.sphics.com/tc/202201-SIU-P203B/>.

It is advisable to download relevant materials to your computer, because the website (or the Internet) could be occasionally down. SIU MyCourses, powered by Desire2Learn (D2L), at

<https://mycourses.siu.edu>,

a password protected site, will be used to post grades. D2L will also be used for submission of Quizzes and Homework.

Lectures

Lectures will be delivered in Neckers 440, or on Zoom, during the scheduled class periods (Mondays, Wednesdays and Fridays 10:00-10:50 AM). On Zoom the lectures will be recorded. 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 %
Quizzes	10 % and y in Eq. (1)
Midterm Exams ($3 \times 15 %$)	45 %
Final Exam	15 %

Homework

Homework will be assigned about once in a week. Homework will be based on the concepts covered in the classroom and will mostly be based on problems from the textbook. Students are encouraged to discuss the homework with their classmates, everyone around them, and the instructor. Students are allowed to use any resource available to them for completing the homework. Homework submission should consist of scanned images of pages as a single PDF file on D2L.

Homework will be graded primarily for the presentation of the thought process. Intermediate steps will be awarded points. The final answer should have the right units and correct number of significant digits. It is the responsibility of the student to present the work clearly. When solutions are provided homework is graded for presenting the work.

If a student can attend the lectures and afterwards complete the homework without consulting any resources, including the textbook, then the student should consider prepared for the exams. However, if it becomes necessary to refer to resources, which is most often the case, one should keep track of the extent of this assistance. Then, the recommendation is to work on similar problems in the textbook until satisfactory independence has been achieved.

Exams

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

Midterm Exam 1	February 4 (Friday, during class period)
Midterm Exam 2	March 4 (Friday, during class period)
Midterm Exam 3	April 8 (Friday, during class period)

The midterm exams will assess you on concepts covered in lectures, homework, and textbook material. All the midterm exams will be cumulative, but you are advised to concentrate more on topics covered in the later part of the semester. The exams will be graded to get a general notion of the students development in the course.

If your absence from the exam is properly authorized with an appropriate “University Form for Excused Absences”, which usually needs to be given to the instructor before the absence, your average score in all the exams might be used to cover for the missed exam. Makeup exams are typically not encouraged, because they are less predictable, tend to not follow the standard style, and if administered could even be an oral exam.

Quizzes

Quizzes will constitute exercises or simply topics. The student is expected to ponder, explore the answer, briefly summarize what they learned in a few sentences, and submit on D2L. Do not spend more than ten minutes on a days extra credit work. The grading of extra credit work will not be for correctness and mostly for attempting. The points earned in the extra credit work decides the percentage of the curve parameter in Eq. (1) used to boost your grade.

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' ,

$$x' = x + ay(100 - x), \tag{1}$$

where $0 \leq a \leq 1$ is the curve parameter chosen by the instructor and $0 \leq y \leq 1$ is determined by your points 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. The following is the grading scheme for the course. Here x' is ‘Your Score’ in percent.

$90 \leq x' \leq 100$	A	(98% in homework, 85% in exams)
$80 \leq x' < 90$	B	(88% in homework, 75% in exams)
$70 \leq x' < 80$	C	(85% in homework, 60% in exams)
$55 \leq x' < 70$	D	
$0 \leq x' < 55$	F	

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

Spring 2022

CARBONDALE

MISSION STATEMENT FOR SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

SIUC 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:	01/10/2022
Last day to add full-term course (without Dean's signature):	01/16/2022
Last day to withdraw from the University with a full refund:	01/21/2022
Last day to drop a full-term course for a credit/refund:	01/23/2022
Last day to drop a full-term course (W grade, no refund):	03/27/2022
Final examinations:	05/02–05/06/2022

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>

SPRING SEMESTER HOLIDAYS

Martin Luther King, Jr.'s Birthday 01/17/2022
Spring Break 03/05-03/13/2022

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>. Additional [informational flyer](#).

DISABILITY SUPPORT SERVICES

SIUC 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 <https://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, SIUC 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>

COVID-19

SIUC's policy on face masks and social distancing is consistent with the guidance from the Centers for Disease Control and Prevention and the Illinois Department of Public Health. For up-to-date information, students, faculty, and staff should visit SIUC's COVID website (siu.edu/coronavirus), which includes the Saluki Safety Plan. People can also send an email to pandemicinfo@siu.edu.

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 SIUC visit: <http://registrar.siu.edu/students/withdrawal.php>

SIUC's EARLY WARNING INTERVENTION PROGRAM (EWIP)

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

EMERGENCY PROCEDURES

We ask that you become familiar with Emergency Preparedness at SIUC. Emergency response information is available on posters in buildings on campus, on the Emergency Preparedness at SIUC 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>

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

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

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

Need additional help with an issue? Visit SALUKI SOLUTION FINDER at <http://solutionfinder.siu.edu/>