

# PHYS 205A-001: UNIVERSITY PHYSICS

SYLLABUS (Spring 2025)

*School of Physics and Applied Physics, Southern Illinois University–Carbondale*

Last updated: January 13, 2025

## 1 General information:

Instructor: K. V. Shajesh

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

Class meetings: MWF 12:00-12:50 PM, in Neckers 440.

Office hours: MWF 09:30-11:00 AM; MF 3:00-4:00 PM.

## 2 Prerequisites:

A strong aptitude for basic mathematical techniques will be necessary for the course. The following is a partial list of the mathematical techniques that will be used in the course: algebra, vector algebra, analytic geometry, differential and integral calculus.

Completing MATH 150 with a grade C or better is an official prerequisite for the course.

## 3 Course description

The course will broadly cover topics on Mechanics, Oscillations and Mechanical waves, and Thermodynamics. These are covered in the first twenty two chapters of the textbook. We will cover a fair amount in the limited time available.

### Essential learning outcomes

The students will be exposed to concepts and ideas that can be deduced from fundamental laws. They will master and perfect these concepts using problem solving techniques by making errors and mistakes in their homework. By reflecting on their thought process in problem-solving they will learn to think critically, honestly, without bias, and cultivate methods to develop instincts from their problem-solving experiences.

### Textbook

The following is the assigned textbook for the course:

*Physics: for Scientists and Engineers* by Raymond A. Serway and John W. Jewett, Jr.  
9th Edition, Brooks/Cole Cengage Learning.

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, University Physics. OpenStax. 19 September 2016.

This publication is licensed under a Creative Commons Attribution 4.0 International License. The electronic copy of the textbook is available for free at <http://cnx.org/content/col12031/latest/>. A printed copy of the publication is available for a nominal price.

### Web-page

Relevant notes, recordings of lectures if recorded, and homework will be posted at

<http://www.sphics.com/tc/202501-SIU-P205A/>.

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 Quiz and Homework.

## 4 Course work

### Lectures

The lectures in Spring 2021 were recorded and are good representations of the lectures for this course. They are available on the course webpage.

### Quizzes

The questions in quizzes are conceptual. They might be open ended, thus, it is not recommended to spend more than ten minutes on a question. You are encouraged to ponder about it though. Briefly summarize your answer in a few sentences, and submit on D2L. The grading of quizzes will not be for correctness and mostly for attempting.

The points earned in the quizzes also decides the percentage of the curve parameter in Eq. (1) used to boost your grade.

### Homework

Homework will be assigned about once in a week. Homework will be based on the concepts covered in the lectures. 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 will consist of scanned images of pages as a single PDF file on D2L.

If a student can attend the lectures and afterwards complete the homework without consulting 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 variation of the problems until satisfactory independence has been achieved.

### Exams

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

Midterm Exam 01	Feb 10 (Monday, in class)
Midterm Exam 02	Mar 7 (Friday, in class)
Midterm Exam 03	Apr 7 (Monday, in class)
Final Exam	Announced after third week of classes

The Midterm Exams will assess you on concepts covered in lectures, quizzes, homework, and textbook material. All 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 score in the Final Exam (without the curve) could be used to cover for the missed exam. Makeup exams are not encouraged because their format need not follow the regular exam and are less predictable.

## 5 Evaluation

Quiz	10 %
Homework	30 %
Midterm Exams (3 × 15 %)	45 %
Final Exam	15 %

### Grading

Your work 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.

### Assessment

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 points in quizzes (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	(100 % in homework, 82 % in exams)
$80 \leq x' < 90$	B	(100 % in homework, 65 % in exams)
$70 \leq x' < 80$	C	(100 % in homework, 50 % in exams)
$55 \leq x' < 70$	D	
$0 \leq x' < 55$	F	

## 6 Syllabus Attachment

The Provost Office has put together 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 appended.

# Syllabus Attachment

Spring 2025

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: .....01/13/2025

Last day to add full-term course (without Dean's signature): .....01/19/2025

Last day to withdraw from the University with a full refund: .....01/24/2025

Last day to drop a full-term course for a credit/refund: .....01/26/2025

Last day to drop a full-term course (W grade, no refund):.....03/30/2025

Final examinations: .....05/05/2025–05/09/2025

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 01/20/2025

Spring Break 03/08/25-03/16/25

**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](#).

**OFFICE FOR ACCESS AND ACCOMMODATIONS:** SIU Carbondale is committed to providing an inclusive and accessible experience for all students with disabilities. Office for Access and Accommodations coordinates the implementation of accommodations. If you think you may be eligible for accommodations but have not yet obtained approval please contact OAA immediately at (618) 453-5738 or <https://access.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](mailto:siucares@siu.edu), or <http://salukicares.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>.

**PREGNANCY:** Title IX makes it clear that students who are pregnant or have a related condition may contact the Title IX Coordinator to request accommodations or to report any allegations of discrimination. The Title IX Coordinator may be contacted at: Nick Wortman, Associate Vice Chancellor for Human Resources, Southern Illinois University Carbondale, 0135 Woody Hall, 900 S. Normal Avenue, Mail Code 6520, Carbondale, IL 62901, (618) 453-6667, [equity@siu.edu](mailto:equity@siu.edu).

**SIU COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS):** Mental health counseling services are available by calling [CAPS](#) at (618) 453-5371. CAPS offers confidential same-day services and ongoing counseling. For after hours crisis care, students are encouraged to call 988, 911, or present to their nearest emergency room.

**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: <https://registrar.siu.edu/students/withdraw.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: <https://corecurriculum.siu.edu/for-faculty/>.

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

## CATALOGS:

[catalog.siu.edu](http://catalog.siu.edu)

[gradcatalog.siu.edu](http://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: <https://class.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:** <https://libcal.lib.siu.edu/hours/>

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

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