

PHYS 203A-002: COLLEGE PHYSICS

SYLLABUS (Fall 2020)

Department of Physics, Southern Illinois University–Carbondale

Last updated: November 6, 2020

1 General information:

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Zoom Meeting ID: 934 4515 4889

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

Class meetings: TR 12:35-1:50 PM, on Zoom.

Office hours: MTWF 3:00-4:00 PM; W 11:00 AM-1:00 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 MATH 109 or 111 or 125 or 140 or 150, with a grade C or better, is an official prerequisite for the course.

3 Course description

The course will broadly cover the topics of Mechanics, Thermal Physics, and Wave Motion. These are covered in the first seventeen chapters of the textbook. We will cover a fair amount in the limited time.

Mechanics is the study of motion of an object under the response of applied forces. Motion of an object is described by its position, velocity, and acceleration. Newton's laws of motion describes the motion of an object under the action of forces. Spaceflight is an example of a phenomena in which Mechanics plays a central role.

Thermal Physics studies the form of energy associated with heat. The laws of thermodynamics describes the phenomena involving this form of energy. A car engine is an example of a device that is based on Thermal Physics.

Wave motion studies the transfer of energy from one point to another due to oscillations, without any transfer of matter. Sound, created by human vocal cords, and radio signals are examples of waves.

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, recordings of lecture, and homework will be posted at

<http://www.sphics.com/tc/202008-SIU-P203A/>.

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 Extra Credit, Homework, and Exam.

Lectures

Lectures will be delivered on Zoom during the scheduled class periods (Tuesdays and Thursdays 12:35-1:50 PM). 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	40 %
Extra Credit Work	10 % and y in Eq. (1)
Midterm Exams ($4 \times 10\%$)	40 %
Final Exam	10 %

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 will 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.

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 similar problems in the textbook until satisfactory independence has been achieved.

Exams

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

Midterm Exam 1	September 8 (Tuesday, during class period)
Midterm Exam 2	October 1 (Thursday, during class period)
Midterm Exam 3	October 27 (Tuesday, during class period)
Midterm Exam 4	November 19 (Thursday, during class period)
Final Exam	December 10 (Thursday, 12:30-2:30 PM)

The exams will be available on the course webpage and on D2L. All the exams will be open notes, open book, open resource. You will have the complete class period to work on the exam, take pictures, and submit the file on D2L. Consulting another person during exam will be considered academic misconduct.

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 entertained, because they are less predictable, tend to not follow the standard style, and if administered could be an oral exam.

Extra Credit Work

Extra Credit exercises, or topics, will be mentioned during the lectures on a spontaneous basis. The student is expected to pose the question, 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' ,

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

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 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
$80 \leq x' < 90$	B
$70 \leq x' < 80$	C
$60 \leq x' < 70$	D
$0 \leq x' < 40$	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

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. 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>