

PHYS 203A: COLLEGE PHYSICS

SYLLABUS (Spring 2016)

Department of Physics, Southern Illinois University–Carbondale

Last updated: January 20, 2016

1 General information:

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Web-page: <http://www.physics.siu.edu/~shajesh>
Class meetings: MWF 2:00-2:50PM, in Neckers 440.
Office hours: TR 11:00 AM-Noon; MWF 1:00 PM-1:30 PM;
MTWRF 3:00 PM-3:30 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

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://openstaxcollege.org/textbooks/college-physics/get>. A professionally printed copy of the publication is available for \$48.50. Supplemental resources, including the Student Solution Manual, is available for free at <https://openstaxcollege.org/textbooks/college-physics/resources>.

Web-page

SIU Online, powered by Desire2Learn, at

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

a password protected site, will be used to post grades and necessary materials for the course. Homework will be administered by an online service at

<http://www.webassign.net>,

which requires the student to register and make a payment. The class key needed to enroll with webassign for this course is

siuc 3042 1167.

4 Course work

Evaluation

| | |
|--|------|
| Homework | 30 % |
| Midterm Exams ($3 \times \sim 16.7\%$) | 50 % |
| Final Exam | 20 % |

Homework

Homework will be assigned on every chapter covered, at <http://www.webassign.net>. Homework will be based on the concepts covered in the classroom and will mostly be problems from the textbook. The web based system allows students to take multiple trials to get the right answer and gives instant feedback on the correctness of their final answer. Note that the web based software does not grade the detailed steps of your work, instead it only checks your final answer. Nevertheless, students will be expected to show detailed steps of their thought process in tests and quizzes. Further, answers should have appropriate units and significant figures.

Students are encouraged to discuss the homework with their classmates and everyone around them. Since the web based system is designed such that each student gets a slightly different version of the question, it reduces the chance of outright cheating.

Exams

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

| | |
|----------------|--------------------------------|
| Midterm Exam 1 | February 19 (Friday, in class) |
| Midterm Exam 2 | March 23 (Wednesday, in class) |
| Midterm Exam 3 | April 22 (Friday, in class) |
| Final Exam | May 9 (Monday, 2:45-4:45 PM) |

The midterm exams will assess you on concepts covered in lectures, textbook material, and homework. All the midterm exams will be cumulative, but you are advised to concentrate more on topics covered in the later part of the semester. Unlike homework, the exams will be graded manually, and will be used to get a general notion of the students development in the course. There will be no make up exams. 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 will be used to cover for the missed exam.

Grading

The grading involves 30 % of homework and 70 % of exam. Generally, it is significantly easier to score in homework in comparison to exams. In the past, seventy percent of the students scored more than ninety percent in homework, while only ten percent scored more than ninety percent in exams.

The following is the grading scheme for the course. Here x is the final score in percent. The final column is a recommendation of a possible breakup that one can aim for the corresponding grade.

| | | |
|----------------------|---|-----------------------------------|
| $85 \leq x \leq 100$ | A | (97 % in homework, 80 % in exams) |
| $72 \leq x < 85$ | B | (90 % in homework, 65 % in exams) |
| $60 \leq x < 72$ | C | (80 % in homework, 50 % in exams) |
| $40 \leq x < 60$ | D | |
| $0 \leq x < 40$ | F | |

In the exceptional case where the midterm average is greater than the homework average, the midterm average can be used to replace the homework average.

5 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.

IMPORTANT DATES *

| | |
|--|------------------|
| Semester Class Begins..... | 01/19/2016 |
| Last day to add a class (without instructor permission):..... | 01/24/2016 |
| Last day to withdraw completely and receive a 100% refund: | 01/31/2016 |
| Last day to drop a course using SalukiNet:..... | 04/03/2016 |
| Last day to file diploma application (for name to appear in Commencement program): | 02/12/2016 |
| Final examinations: | 05/09–05/13/2016 |

Note: For outreach, internet, and short course drop/add dates, visit Registrar's Academic webpage <http://registrar.siu.edu/>

SPRING SEMESTER HOLIDAYS

Martin Luther King, Jr.'s Birthday Holiday 01/18/2016

Spring Break 03/12—03/20/2016

WITHDRAWAL POLICY ~ Undergraduate only

Students who officially register for a session may not withdraw merely by the stopping of attendance. An official withdrawal form needs to be initiated by the student and processed by the University. For the proper procedures to follow when dropping courses and when withdrawing from the University, please visit <http://registrar.siu.edu/catalog/undergraduatecatalog.html>

INCOMPLETE POLICY~ Undergraduate only

An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within one semester following the term in which the course was taken, or *graduation*, whichever occurs first. Should the student fail to complete the course within the time period designated, that is, by no later than the end of the semester following the term in which the course was taken, or graduation, whichever occurs first, the incomplete will be converted to a grade of F and the grade will be computed in the student's grade point average. *For more information please visit:*

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

REPEAT POLICY

An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit no more than two times (two total enrollments) unless otherwise noted in the course description. For students receiving a letter grade of A,B,C,D, or F, the course repetition must occur at Southern Illinois University Carbondale. Only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. *See full policy at*

<http://registrar.siu.edu/catalog/undergraduatecatalog.html>

GRADUATE POLICIES

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

<http://gradschool.siu.edu/about-us/grad-catalog/index.html>

DISABILITY POLICY

Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must come to the DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements.

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

PLAGIARISM

Student Conduct Code http://srr.siu.edu/student_conduct_code/

Guidelines for Faculty <http://pvcaa.siu.edu/common/documents/Plagiarism/Guide%20to%20Preventing%20Plagiarism.pdf>

MORRIS LIBRARY HOURS

<http://www.lib.siu.edu/about>

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>

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: (618) 453-5714, or siucares@siu.edu,

<http://salukicare.siu.edu/index.html>

EMERGENCY PROCEDURES

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. We ask that you become familiar with the SIU **Emergency Response Plan** and **Building Emergency Response Team (BERT)** programs. Emergency response information is available on posters in buildings on campus, available on BERT's website at www.bert.siu.edu, Department of Safety's website at www.dps.siu.edu (disaster drop down) and the Emergency Response Guideline pamphlet. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. *It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.*

INCLUSIVE EXCELLENCE

SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ is an important part of education as well as an essential preparation for any career. *For more information please visit:* <http://www.inclusiveexcellence.siu.edu/>

LEARNING AND SUPPORT SERVICES

Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website:

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

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

WRITING CENTER

The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit <http://write.siu.edu/>

AFFIRMATIVE ACTION & EQUAL OPPORTUNITY

Our office's main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. *For more information visit:*

<http://diversity.siu.edu/#>

Additional Resources Available:

SALUKINET: <https://salukinet.siu.edu/cp/home/displaylogin>

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

PROVOST & VICE CHANCELLOR: <http://pvcaa.siu.edu/>

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