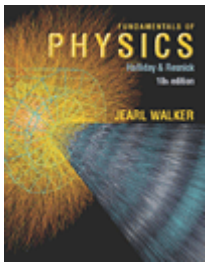
PHYS-211

UNIVERSITY PHYSICS I

Instructor: Dr. Frank Strieder
Office: EEP 219 (office phone: 605-394-1227)
Email: Frank.Strieder@sdsmt.edu
Office Hours: Friday, 10 – 11 am in an odd week of class (see schedule for numbering)
Monday, 10 – 11 am in an even week of class
or by appointment (send an e-mail) or just walk into my office.
Course: PHYS-211 "University Physics I" (3 credits)
Lecture Hall: Mineral Industries Building 222 – SDSM&T
Time: Fall Semester 2016, 08-21-2017 – 12-04-2017, Mondays, Wednesdays & Fridays, 9:00 – 9:50 AM Mountain Time
Textbook: "Fundamentals of Physics (Part 1)", 10th Edition, Jearl Walker, David Halliday & Robert Resnick, Wiley



Special Notes: Internet access is required for this course.
All homework must be completed and will be graded on-line.
Registration on the homework website is required.
Below is a DIRECT link to your homework webpage.
DO NOT!!! Search the Wiley website for SDSM&T courses!

Course Web Address: **https://www.wileyplus.com/class/592886**
Copy the URL into the address line of you browser and immediately bookmark the login page, then select "Register".

Prerequisites: MATH 123 or permission of instructor.

Course Description: This is a first course in a two (2) semester calculus-level sequence, covering fundamental concepts of physics. This is the preferred sequence for student majoring in physical science and engineering. Topics include classical mechanics and thermodynamics. **SDSM&T course covers classical mechanics only.** Credit will not be allowed in both Phys 111-113 and Phys 211-213.

Course Objectives: a) To present the basic concepts and principles of mechanics;
b) To strengthen an understanding of the concepts and principles through a broad range of interesting applications in the real world.

To meet these objectives, emphasis is placed on sound physical arguments and problem-solving methodology.

Upon completion of this course, students should demonstrate the ability to:

1. Use SI units and convert units from one system to another.
2. Perform basic operations on vectors such as adding and subtracting vectors geometrically and by components in the unit-vector notation; converting components into polar coordinates; multiplying a vector by a scalar and

performing the dot and cross multiplication of vectors.

3. Calculate displacement, average and instantaneous velocity and acceleration of a particle given its position vector; describe projectile motion and uniform circular motion; relate velocities in different frames of reference.
4. Use the free-body diagrams in solving dynamics problems; apply Newton's laws to a system of several interacting bodies in order to find their accelerations.
5. Calculate work done by a constant or general variable force; calculate power given the force and instant velocity; use the work-energy theorem to relate a change in kinetic energy to the net work done on a system.
6. Calculate gravitational and elastic potential energy; apply energy conservation principle to systems involving gravity, springs, and friction.
7. Find the center of mass of a system of several particles; apply Newton's second law to a system of particles in order to relate the net external force and the acceleration of the system's center of mass.
8. Use conservation of linear momentum and of energy to relate velocities of colliding bodies before and after collision for the cases of elastic and purely inelastic collisions in one and two dimensions.
9. Calculate angular displacement, velocity and acceleration; relate angular and linear variables; calculate rotational kinetic energy; use the parallel-axis theorem to find the rotational inertia of a body; calculate torque; apply the Newton's second law in angular form to relate the net torque and the angular acceleration.

General Education Objectives: This course fulfills Goal #6 of the South Dakota System General Education Requirements: Students will understand the fundamental principles of the natural sciences and apply scientific methods of inquiry to investigate the natural world.

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Student Learning Outcomes: As a result of taking this course and meeting its goals, students will:

1. Demonstrate the scientific method in a laboratory experience. This outcome will be achieved and assessed in Phys 213L course.
2. Gather and critically evaluate data using scientific method.
   Assessment: Students will be able to critically evaluate data (given or obtained) with proper accuracy using appropriate laws and formulas of classical mechanics for scientifically sound presentation of laboratory reports, homework assignments, and of solutions on quizzes and exams.
3. Identify and explain the basic concepts, terminology and theories of selected natural sciences.
   Assessment: Students will be able to identify and apply basic concepts and appropriate laws of classical mechanics in order to solve assigned problems in homework, quizzes, exams, and in oral presentation.
4. Apply selected natural science concepts and theories to contemporary issues.
   Assessment: Students will be able to explain how physics concepts, laws, and phenomena relate to contemporary engineering and science in classroom discussions and written assignments.

Course Schedule: see last page (subject to change)

Instructional Methods: This is primarily a lecture-based course. Lectures will be given at SDSM&T.

Exams: There will be four hour exams. The tentative schedule for these exams is:
Exam #1: September 22nd, 2017 (Chapters 2 - 4)
Exam #2: October 13th, 2017 (Chapters 5 & 6)
Exam #3: November 3rd, 2017 (Chapters 7 & 8)
Exam #4: November 29th, 2017 (Chapters 9 & 10)
Final Exam: TBA
The Final Exam will be a comprehensive exam on topics, which have received emphasis.
Everyone must take the final exam.

Make-Up Policy: Students are expected to take the exams on the scheduled dates. If you have a conflict with a particular exam date, please contact the instructor at least a week prior to the exam so that we can discuss accommodations. Anyone missing an exam without prior approval and arrangement with the instructor, or certifiable medical reasons, will be assigned a zero grade for the exam in question.

Exam Policy:

- All 1-hour exams will be given in *scantron* form with answers posted online AFTER everyone has completed the exam.
- During each exam, there will be a written exam and *scantron* sheet. Mark your answers on BOTH. Keep the written exam for future reference and to check your work. Hand in the *scantron* before leaving. *Scantrons* will NOT be returned.
- All 1-hour exams will be given in your regular classroom at the regular class time.
- All exams, including the Final Exam, will be multiple-choice and are closed book. Student prepared note cards and cheat sheets are not permitted. No computers or phones are permitted during exams.
- Students may use the department approved cheat sheets only.
- Calculators are permitted on all exams.
- Phones are NOT permitted, anyone seen using a phone during an exam will receive an immediate ZERO!
- Exam scores will be posted on your Wiley Plus account within a few days of taking the exam, please be patient in waiting for your score.
- The final exam will be comprehensive.
- Exams are scheduled in advance for YOUR CONVIENIENCE. Do NOT make any plans to leave campus before knowing your exam schedule for EVERY class. Especially Final Exams.
- Students who know they will be absent for a scheduled exam may take the exam early NOT later. This applies to all students, including those involved in athletics and other school sponsored events.

Grading: Grades will be calculated as follows from maximum number of available points:

Homework assignment*:	150
Exam #1:	100
Exam #2:	100
Exam #3:	100
Exam #4	100
Final Exam	150
TOTAL	700

*Extra Credit will be available through Homework. See description below.

The final grade for the course will be based on the following LETTER GRADE
A = 85% and above
B = 70 – < 85 %
C = 55 – < 70 %

D = 50 – < 55 %
F = below 50%

Homework: All homework will be assigned and graded on-line. Homework assignments will be graded every 7-10 days; no late homework will be accepted. All homework points up to 150 points will apply towards the Homework portion. Any points earned in excess of 150 will be considered extra credit. Other opportunities for extra credit will be made available during the semester.

Attendance: In order to succeed in this course, students should attend the lectures, actively join group discussions, and do homework on time. The course assignments and exams are based on the material covered by the lectures and the textbook. In case missing a lecture is inevitable, be sure to borrow another student's class note and make sure that you understand what's taught.

Attendance Policy:

- I DO NOT take attendance, however I do remember faces and try to learn as many names as possible. By not attending class you're telling me that I am not worth your time.
- Come to class ON TIME and STAY for the entire class period. What I have to say is important and your showing up late or leaving early tells me that you do not care. It is also rude and unprofessional.
- Students are responsible for making up any missed assignments, quizzes and tests. It does not matter WHY you missed class, you are still responsible for the material.
- Get at least 2 contacts from your fellow students. Contact these people with questions about class if you are absent or to get notes. If your contacts do not take good notes or are themselves missing class, get new contacts.
- NEVER email me or any other instructor asking if you "missed anything important". As far as we are concerned, EVERYTHING IS IMPORTANT!

Preparation: Always be prepared to work. Please bring a pen and a notepad to each class. Students are expected to spend a minimum of six hours per week studying for every three hours spent in class. Students who spend the minimum time studying usually get the minimum grade. Previewing the reading assignment will help understand the lecture more easily and so is strongly encouraged. More careful readings (not limited to the textbook) may be recommended after a lecture. Please do not hesitate to ask questions in class or by an in-person visit during instructor's office hours.

Class Etiquette: Disruptive behavior in class will not be tolerated. Nothing is more distracting than incessant private chatting in class. If you would like to ask a question, raise your hand. If you have a cell phone, switch it off (or set it to silent mode) before class starts. Above all, please be considerate of the other students in the class. NO texting during class. It's RUDE!!!
Laptop computers may ONLY be used in TABLET mode for note taking. No web surfing or playing games. This distracts other students and you will be asked to leave class if caught. If your computer does not have tablet mode then you need to take notes the old fashioned way – paper and pencil. If you would like to look up a physics topic on your computer or smart phone that relates to our current class discussion, please ask first and I will approve it.
When emailing me, please use proper email etiquette. If you are not sure what that means, Google it.

Academic Integrity: Public universities in South Dakota consider plagiarism, cheating, and other forms of academic dishonesty inimical to the objectives of higher education, therefore supports the imposition of penalties on those who engage in academic dishonesty. At the discretion of the instructor, a student caught engaging in any form of academic dishonesty may be: given a zero for that assignment, allowed to

rewrite and resubmit the assignment for credit, assigned a reduced grade for the course, dropped from the course, or failed in the course.

Freedom in Learning: Students are responsible for learning the content of any course of study in which they are enrolled. Under the Board of Regents and South Dakota Public University policies, student academic performance shall be evaluated solely on an academic basis and students should be free to take reasoned exception to the data or views offered in any course of study. Students who believe that an academic evaluation is unrelated to academic standards but is related instead to judgment of their personal opinion or conduct should first contact the instructor of the course. If the student remains unsatisfied, the student may contact the department head and/or dean of the college that offers the class to initiate a review of the evaluation.

Disability Accommodation: Students who have the need of academic accommodations or access accommodations due to a documented disability should contact and register with the ADA Services Office on campus (Megan Reder-Schopp, at 394-6988) during the first week of class (or as soon as possible after the diagnosis of a disability during the semester). The ADA Office officially assists students through the process of disability verification and coordination of appropriate and reasonable accommodations. Students currently registered with Disability Services must obtain a new accommodation memo each semester.

All students with ADA documentation may choose to schedule to take their exams as per their specific accommodations. Please contact Megan Reder-Schopp to set up your exam times: Megan.Reder-Schopp@sdsmt.edu

Extra Help: If you are falling behind in your work, it is your responsibility to seek help. You have many options including…

- Coming to my office during Office hours or by making an appointment;
- Visiting the Tech Learning Center (TLC) for tutoring services in the basement of the Devereaux library;
- Visiting with Physics Department tutoring services in the EEP building;
- AXE tutoring, Sunday evenings in CBE 2228;
- Visiting Multi-Cultural Affairs tutoring services in the Surbeck Center;
- Visiting the Counseling Offices in the Surbeck Center.

Finally Student Responsibilities **(edited from Jamestown Community College webpage)**

Students are responsible for taking an active role in their learning by recognizing that they are accountable for their academic success. Student responsibility is demonstrated when students make choices and take actions which lead them toward their educational goals.

Responsible students take ownership of their actions by exhibiting the following behaviors.

They:

- demonstrate academic integrity and honesty.
  - http://www.sdsmt.edu/academics/faculty/docs/academic-integrity/
- attend and participate in classes, labs, and seminars.
- are prepared and on time.
- complete the assigned work in a timely manner with attention to quality of work.
- avoid making excuses for their behavior.
- communicate in a careful and respectful manner with professors, peers, and other members of the university community.
- are engaged learners who dedicate sufficient time outside of class to course work.
- act in a civil manner that respects the university learning/social environment and complies with university policies outlined in the university catalog.

    - http://www.sdsmt.edu/About/Office-of-the-President/SDSM-T-Policy-Manual/
- utilize university resources and services to seek help when needed.
    - http://www.sdsmt.edu/Campus-Services/
- conduct themselves in a manner that respects the diversity of ideas and opinions of others.
    - http://www.sdsmt.edu/Campus-Life/Student-Resources/Student-Conduct/
- identify, develop, and implement a plan to achieve their educational goals.

TENTATIVE SCHEDULE

(Subject to Change)

#	Week of	Monday	Wednesday	Friday
1	Aug. 21 - 25	Syllabus & Wiley Plus Registration	Chapter 2	Chapter 2
2	Aug. 28 - Sep. 1	Chapter 2	Chapter 2	Chapter 3
3	Sep. 4 - 8	Labor Day No class	Chapter 3	Chapter 3
4	Sep. 11 - 15	Chapter 3	Chapter 4	Chapter 4
5	Sep. 18 - 22	Chapter 4	Chapter 4 & Review	EXAM I Chapter 2 - 4
6	Sep. 25 - 29	Chapter 5	Chapter 5	Chapter 5
7	Oct. 2 - 6	Chapter 6	Chapter 6	Chapter 6
8	Oct. 9 - 13	Native Am. Day No class	Chapter 6	EXAM II Chapter 5 & 6
9	Oct. 16 - 20	Chapter 7	Chapter 7	Chapter 7
10	Oct. 23 - 27	Chapter 7	Chapter 8	Chapter 8
11	Oct. 30 - Nov. 3	Chapter 8	Chapter 8 & Review	EXAM III Chapter 7 & 8
13	Nov. 6 - 10	Chapter 9	Chapter 9	Veterans Day No class
14	Nov. 13 - 17	Chapter 9	Chapter 9	Chapter 10
15	Nov. 20 - 24	Chapter 10	Thanks Giving No class	Thanks Giving No class
16	Nov. 27 - Dec. 1	Chapter 10 & Review	EXAM IV Chapter 9 & 10	Final Review Q & A
17	Dec. 4 - 8	Final Review Q & A	Study Day No class	Finals Week
18	Dec. 11 - 15	Finals Week	Finals Week	-

FINAL EXAM Information

Date: tba

Time: tba

Location: tba