SYLLABUS

Catalog course description: (3-0) 3 credits. This course is the second course in a two-semester calculus-level sequence, covering fundamental concepts of physics. This is the preferred sequence for students majoring in physical science or engineering. Topics include electricity and magnetism, sound, light, and optics. SDSM&T course covers electricity and magnetism only.


Class Time and Location: Monday, Wednesday, Friday 11:00 – 11:50 AM, in EEP 252

Course Instructor: Dr. Vladimir Sobolev

Office, office hours: 222 EEP; M, W, 5:00 – 6:00 PM; T, Th 5:00 – 6:00 PM

Phone, E-mail: 394 – 1225; Vladimir.Sobolev@sdsmt.edu

Course Web site: http://www.hpcnet.org/sdsmt/directory/courses/2012fa/phys213/213AM001

Prerequisites: PHYS 211.

!! Internet access is required for this course. All homework must be completed on-line. Registration on the homework website is required. Copy the URL http://edugen.wiley.com/edugen/class/cl1292007/ into the address line of your browser and immediately bookmark the login page, then select “Register”. Homework will be graded on-line.

NOTE: Students with special needs or requiring special accommodations should contact the instructor, Dr. V. Sobolev, and/or the campus ADA coordinator, Jollie McCoy, at 394-1924 at the earliest opportunity.

Grade Structure:

<table>
<thead>
<tr>
<th>Points</th>
<th>Grade</th>
<th>%</th>
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<tbody>
<tr>
<td>200</td>
<td>A</td>
<td>85 – 100</td>
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<tr>
<td>190</td>
<td>B</td>
<td>84 – 70</td>
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<td>210</td>
<td>C</td>
<td>69 – 55</td>
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<td>TOTAL</td>
<td>D</td>
<td>54 – 50</td>
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<td>F</td>
<td>49 – 50</td>
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HOUR EXAM | TENTATIVE DATE | TIME | PLACE
---|---|---|---
EXAM I | Friday, September 28 | 11:00 a.m. | EEP 252
EXAM II | Wednesday, October 31 | 11:00 a.m. | EEP 252
EXAM III | Friday, November 30 | 11:00 a.m. | EEP 252

*Quizzes will not be announced beforehand and may be given during the lecture class. Students are responsible for taking the exams when scheduled. Anyone missing an exam without prior approval and arrangement with Dr. Sobolev, or certifiable medical reasons, will be assigned a zero grade for the exam in question. Attendance of lectures is compulsory. The Final Exam will be a comprehensive exam on topics, which have received emphasis.

Everyone must take the final exam.
Course Philosophy:

The idea of this course is to offer a logical presentation of the basic concepts and principles of electricity and magnetism, and to strengthen an understanding of concepts and principles through a broad range of applications to the real world. To meet this goal, the emphasis is placed on sound physical arguments, problem solving methodology as well as numerous examples of use of electricity and magnetism principles in contemporary technology, physical science and other disciplines, including engineering, chemistry, and medicine will be presented.

Students successfully completed this course will be able to:

- use SI units for electric and magnetic physical quantities; know non-system units used in electricity and magnetism;
- understand the basic concepts and laws of classical electrostatics and electrodynamics;
- quantitatively describe the forces between point charges; know major application of electrostatics and electrodynamics in modern technology;
- calculate the electric fields and electric potentials due to point charges and simple continuous charge distributions;
- understand the notions of capacitance and resistance, to find equivalent capacitances and resistances for capacitors and resistors connected in series and in parallel; know major application of capacitors and resistors in electric circuits;
- to apply the Kirchhoff's laws for calculations of multi-loop circuits;
- understand the phenomena taking place in circuits contain resistor and capacitor and how these phenomena are described by corresponding equations;
- calculate magnetic fields due to electric currents;
- understand the laws of motion of charged particles in uniform electric and magnetic fields or combined electric and magnetic fields and applications of these phenomena in modern science and technology;
- understand the laws of electromagnetic induction and their role in modern technology;
- improve ability to use mathematics and problem solving skills

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.

GenEd Goal #6: Students will understand the fundamental principles of the natural sciences and apply scientific methods of inquiry to investigate the natural world.

Student Learning Outcomes: As a result of taking courses meeting this goal, 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.

Freedom in Learning. Students are responsible for learning the content of any course of study in which they are enrolled. Under Board of Regents and University policy, 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 contact the dean of the college, which offers the class to initiate a review of the evaluation.

Policies

- All homework must be completed and will be graded on-line. No late homework will be allowed.
- Quizzes will be offered in class or on-line. In class quizzes will be open book, they will not be announced beforehand.
- Normally, all hour exams and quizzes will be graded within two days after exam.
- Hour exams and final exam will be a combination of problems and multiple-choice questions.
- All exams, including the final, are open book. Only the standard course textbook and calculators are allowed. Notebook computers are not permitted.
- The final exam will be comprehensive with some emphasis on material covered after Exam #3.

Appeals for additional credit on exam problems:

If you feel you should receive more points for a particular solution please use the following procedure.

1. See the professor one or two days after submission for return of your materials.
2. Appeals must be submitted within 10 working days after the graded exam is returned. There will be no second appeals.

Academic misconduct: Any violation of academic integrity policy, such as cheating and plagiarism, will not be tolerated in this course. Penalties may range from a failing grade for the work in question to failure of the course.

TENTATIVE LECTURE TOPIC SCHEDULE

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<tr>
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<th>Monday</th>
<th>Wednesday</th>
<th>Friday</th>
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<tbody>
<tr>
<td>August 27 – 31</td>
<td></td>
<td>Introduction, Ch. 21</td>
<td>Chapter 21, 22</td>
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<td>September 3 – 7</td>
<td><strong>Holiday</strong></td>
<td>Chapter 22</td>
<td>Chapter 22</td>
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<td>September 10 – 14</td>
<td>Chapter 23</td>
<td>Chapters 22, 23</td>
<td>Chapter 23</td>
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<td>September 17 – 21</td>
<td>Chapter 23</td>
<td>Chapters 23</td>
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<td>September 24 – 28</td>
<td>Chapter 24</td>
<td>Chapter 24, 25</td>
<td>(Exam #1 September 28)</td>
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<td>October 1 – 5</td>
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<td>Chapter 25</td>
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<td>October 8 – 12</td>
<td><strong>Holiday</strong></td>
<td>Chapter 25, 26</td>
<td>Chapter 26</td>
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<td>October 15 – 19</td>
<td>Chapter 26</td>
<td>Chapter 26</td>
<td>Chapter 26, 27</td>
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**Final exam**: December 10, 12:00 p.m. – 1:50 p.m. in EEP 252

All one-hour exams will be held in our regular lecture room EEP 252 (see the schedule above).

!!! **Only the textbook and a calculator are allowed to be used during all exams. No laptop or tablet computers are allowed.**