Semester/Year: Spring 2016

Lecture Hours: 4  Lab Hours: 2  Credit Hours: 4

Class Time: 12:00 – 12:50 PM  Days: MWThF  Room: PS 209

Lab Time: 2:00 – 3:50 PM  Days: Th  Room: PS 208

Lab Time: 3:00 – 4:50 PM  Days: F  Room: PS 208

Instructor’s Name: Jared Bowden

Instructor’s Contact Information:
Office Phone: (307)268-2064
Email: jbowden@caspercollege.edu

Office Hours: M 10:00 – 11:00 AM, 2:00 – 3:00 PM; W 10:00 – 11:00 AM; ThF 11:00 – 11:50 AM

Course Description: Second semester course in physics designed for those majoring in physics, engineering, mathematics, or physical sciences. Topics covered are electricity and magnetism and wave motion.

Statement of Prerequisites: Math 2205 Concurrently and Physics 1310.

Goal: The Physics Department will instruct students on knowledge gathering techniques and the understanding of basic physical concepts at a level appropriate to the class level and the student’s individual career goals. A well instructed physics student will be able to take a problem, analyze it both qualitatively and quantitatively, find a solution, and present the solution to others in an appropriate manner conducive to the knowledge level of the audience.

In Physics 1310/1320/2310/2320, students will gain a knowledge of advanced physical concepts and their applications in everyday life. Students will use both qualitative and quantitative problem-solving skills to answer a variety of physics problems based around engineering and physical science concepts.

Outcomes: The bolded outcomes below apply from the Casper College General Education outcomes.

1. Demonstrate effective oral and written communication
2. Use the scientific method
3. Solve problems using critical thinking and creativity
4. Demonstrate knowledge of diverse cultures and historical perspectives
5. Appreciate aesthetic and creative activities
6. Use appropriate technology and information to conduct research
7. Describe the value of personal, civic, and social responsibilities
8. Use quantitative analytical skills to evaluate and process numerical data

Course Objectives:
Passing students should:
- Be proficient in SI unit conversions
- Qualitatively and quantitatively describe Coulomb’s Law
- Be able to draw electric and magnetic field lines
- Use Gauss’s Law to determine fluxes and the electric field
• Be able to determine the electric potential
• Have a quantitative and qualitative understanding of Kirchhoff’s Rules
• Be able to describe a magnetic field
• Qualitatively and quantitatively use the Biot-Savart Law to calculate the magnetic field
• Be able to apply Ampere’s Law and Lenz’s Law to the magnetic field and the induced current in a current loop
• Be able to explain the difference between an AC and a DC current, and apply it in a given situation
• Have a grasp of Maxwell’s Equations and when to apply them in practice
• Qualitatively and quantitatively describe the phase changes of materials using knowledge of the specific and latent heats

Methodology: This course will be presented in a variety of methods. Most information will be presented in a lecture format, which will include board-work, power-point presentations and small group work activities. The students will then use the information taken from lecture and use it in a laboratory setting, where individual and small group work will be used as assessment tools.

Evaluation Criteria:
This class will have 4 Exams, a cumulative final, weekly Homework Assignments, weekly In-Class Quizzes, and weekly Lab Assignments. All homework and some quizzes will be completed and graded in the MasteringPhysics website.

<table>
<thead>
<tr>
<th>Method</th>
<th>% of Final Grade</th>
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<tbody>
<tr>
<td>Homework Assignments</td>
<td>10%</td>
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<tr>
<td>Quizzes</td>
<td>20%</td>
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<tr>
<td>Labs</td>
<td>10%</td>
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<tr>
<td>Exams</td>
<td>60%</td>
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Grading Scale for the Course:
900 ≤ A ≤ 1000
800 ≤ B ≤ 899
700 ≤ C ≤ 799
600 ≤ D ≤ 699
0 ≤ F ≤ 599

Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.

Access to MasteringPhysics is also required. More detailed information will be given in class.

Class Policies:
Homework is graded on MasteringPhysics. The late policy for homework is 0.5% is taken from your total score for each HOUR the homework is late.
Make-up Labs will not be given.
Quizzes and Exams: If you are aware that you will have to miss an exam or a quiz, let the instructor know as early as possible. A make-up exam be given if the situation merits, and will take place outside of the regularly scheduled class period.

Last day to change to an audit or withdraw from the course: April 14th, 2016.
Student Rights and Responsibilities: Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

Chain of Command: If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head/Program Director, the Dean, and lastly the Vice President for Academic Affairs.

Academic Dishonesty: (Cheating & Plagiarism) Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

Official Means of Communication: Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also, where you will find course evaluation links during course evaluation periods.

ADA Accommodations Policy: If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college’s Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, bheuer@caspercollege.edu. The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

Calendar or schedule indicating course content: (be as complete here as possible, at least a grid showing week by week topics to be covered, assignments, due dates, readings etc. This can always be modified with a new handout later in the semester – better to send out a revised schedule than to trust verbal announcements by themselves)
<table>
<thead>
<tr>
<th>Week</th>
<th>Chapters Covered</th>
<th>Topics</th>
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<tbody>
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<td>1</td>
<td>21</td>
<td>Electric Charge and Electric Fields</td>
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<tr>
<td>2</td>
<td>21</td>
<td>Electric Charge and Electric Fields</td>
</tr>
<tr>
<td>3</td>
<td>22</td>
<td>Gauss’s Law</td>
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<tr>
<td>4</td>
<td>23</td>
<td>Electric Potential</td>
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<td>5</td>
<td>24</td>
<td>Capacitance and Dielectrics</td>
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<td>6</td>
<td>25</td>
<td>Current, Resistance &amp; EMF</td>
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<td>7</td>
<td>26</td>
<td>Direct-Current Circuits</td>
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<tr>
<td>8</td>
<td>-</td>
<td>Mid-Term Week/Make-Up</td>
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<td>9</td>
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<td>Spring Break</td>
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<tr>
<td>10</td>
<td>27</td>
<td>Magnetic Fields and Magnetic Forces</td>
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<tr>
<td>11</td>
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<td>Sources of Magnetic Fields</td>
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<td>12</td>
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<td>Electromagnetic Induction</td>
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<td>13</td>
<td>17</td>
<td>Temperature and Heat</td>
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<tr>
<td>14</td>
<td>18</td>
<td>Thermal Properties of Matter</td>
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<tr>
<td>15</td>
<td>19</td>
<td>The First Law of Thermodynamics</td>
</tr>
<tr>
<td>16</td>
<td>20</td>
<td>The Second Law of Thermodynamics</td>
</tr>
</tbody>
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May 9 – May 12 Finals Week