This course was prepared and revised to include concepts and technology related with sustainability issues. This work is supported by ‘A SSU Sustainability in the Classroom Award’, Summer 2015.

**Course**: PHYS 100  Descriptive Physics: Preparation for the Sustainable Future

1:00 – 1:50 pm  **MWF**  Salazar2021

**Instructor**: Dr. So Young Han

**Contact Information**: E-mail: hanso@sonoma.edu, Darwin 300B, Tel.:664-3242

www.sonoma.edu/users/h/hanso/

**Office Hours**: MWR : 10 – 10:45 am Darwin 300B

**Text**: *Conceptual Physics* by Hewitt 11th Edition  (Recommended)

**Course Description**

A descriptive survey of the important principles of physics. The topics covered include mechanics, matter, thermodynamics, electricity and magnetism. We would also consider energy and sustainability issues this semester.

Not recommended for B.S. students. Registration for Chemistry, Physics, or Mathematics majors requires Physics and Astronomy Department Consent. Satisfies GE, category B1 or B3(Physical Science).

**Prerequisite**: There is no prerequisite. You will solve problems with basic trigonometry and algebra.

**Course Objective**

The expected outcomes from this course are

1. Students will examine and redefine common science concepts.
2. Students will practice thinking in a logical process, which is essential in science.
3. Students will develop cognitive understanding of science concepts through in-class demonstrations and exercises.
4. Students will be able to self-identify problems in topics from observations in their daily life. From this approach, students can related the sustainability issues to them and learn to avoid passive attitudes towards the problem.
5. Students will be able to analyze identified problems through a logical thinking process and applying physics concepts introduced in class.
6. Students will demonstrate the ability to propose possible solutions and effectively present their proposals.
7. Students will develop cooperative skills including group communication, logical arguments, and questioning hypothesis.
8. Students will develop a lifelong habit of observing their surroundings, making sustainable choices and evaluating ideas given by others with scientific, logical processes.
University Policies

There are important University policies that you should be aware of, such as the add/drop policy; cheating and plagiarism policy, grade appeal procedures; accommodations for students with disabilities and the diversity vision statement [Academic Integrity]

http://www.sonoma.edu/UAffairs/policies/cheating_plagiarism.htm

Students are expected to be honest in meeting the requirements of courses in which they are enrolled. Do not look up solutions to homework problems online or copy solutions from your peers. Cheating or plagiarism is dishonest, undermines the necessary trust upon which relations between students and faculty are based, and is unacceptable conduct. Students who engage in cheating or plagiarism will be subject to academic sanctions.

[Accommodations for Students with Disabilities]

If you need disability related accommodations for this class, such as a note taker, test taking services, special furniture, use of service animal, etc., please contact the office of Disabled Student Services (DSS) located in Salazar1049, Tel: 664-2677 www.sonoma.edu/uaffairs/policies/disabilitypolicy.htm

Outline

Attendance: Attendance is mandatory. In case of an absence, the student is responsible for the learning experience and missing assignments made during his/her absence.

Grade:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams (2 exams + Final)</td>
<td>40%</td>
</tr>
<tr>
<td>Homework</td>
<td>15%</td>
</tr>
<tr>
<td>Quiz</td>
<td>15%</td>
</tr>
<tr>
<td>Sustainability Project</td>
<td>30%</td>
</tr>
</tbody>
</table>

A [93 above, A- [92-89], B+ [88-86], B [85-83], B- [82-79], C+ [78-76], C [75-73], C- [72-69], D [68-60], F [Below 60]

* Grades are based on an absolute scale, not a curve.

* Exam and quizzes
  You can drop one exam score.
  You will have a quiz on the homework due date.
  If you have above 90% average in exams (2 exams) before the final, you may be excused from the final exam and the final exam grade will be recorded as 93%.

* Homework
  Homework assignment will be posted both in Moodle and www.sonoma.edu/users/h/hanso/.
  You may submit a late homework no later than 1 week after the due date.
  There is a 10% deduction in the late homework scores.
  Write homework questions and show your works. Draw a box around the final answer.

* Class Participation: Be respectable, be responsible and be productive.
  You will have group discussions and In-Class Hands-on practices.
  Pop quizzes will be given without announcement. (Bonus Points)
  The attendance will be checked randomly. Your absence (excused or not) can affect the class participation points.
  Using a personal laptop or a phone is not allowed in class.
  If you need to leave early you need to write a note.

* Sustainability Project
  You will have 3 reports related with sustainability issue.
  I will collect your sustainability journal at the end of the semester. Instruction for the reports and the journal will be posted in Moodle and www.sonoma.edu/users/h/hanso/.
Tentative Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topic 1: Introduction, SI units, Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>(Aug 26)</td>
<td>Orientation</td>
</tr>
<tr>
<td>W2</td>
<td>(Aug 31)</td>
<td>Topic 2: Mechanics</td>
</tr>
<tr>
<td>W3</td>
<td>(Sep 7)</td>
<td>Topic 3: Matter and Thermodynamics</td>
</tr>
<tr>
<td>W4</td>
<td>(Sep 14)</td>
<td>Topic 4: Electricity and Magnetism</td>
</tr>
<tr>
<td>W5</td>
<td>(Sep 21)</td>
<td>Sep 7 Labor day Holiday</td>
</tr>
<tr>
<td>W6</td>
<td>(Sep 28)</td>
<td></td>
</tr>
<tr>
<td>W7</td>
<td>(Oct 5)</td>
<td></td>
</tr>
<tr>
<td>W8</td>
<td>(Oct 12)</td>
<td></td>
</tr>
<tr>
<td>W9</td>
<td>(Oct 19)</td>
<td></td>
</tr>
<tr>
<td>W10</td>
<td>(Oct 26)</td>
<td>Exam1 Sep 25</td>
</tr>
<tr>
<td>W11</td>
<td>(Nov 2)</td>
<td>Exam2 Nov 6</td>
</tr>
<tr>
<td>W12</td>
<td>(Nov 9)</td>
<td>Thanksgiving Holiday</td>
</tr>
<tr>
<td>W13</td>
<td>(Nov 16)</td>
<td></td>
</tr>
<tr>
<td>W14</td>
<td>(Nov 23)</td>
<td></td>
</tr>
<tr>
<td>W15</td>
<td>(Nov 30)</td>
<td></td>
</tr>
<tr>
<td>W16</td>
<td>(Dec 7)</td>
<td></td>
</tr>
</tbody>
</table>

Final Exam: (Dec 18 Friday 2 – 3:50 pm)

Semester at a glance

<table>
<thead>
<tr>
<th>m</th>
<th>kg</th>
<th>sec</th>
<th>mol</th>
<th>K</th>
<th>A</th>
<th>cd</th>
</tr>
</thead>
</table>

**Topic 1: Introduction:** *Let's start A, B, C's in Physics!*
- SI units
- Scale, space perception
- Matter and time
- Mass, Weight and Density

[Special Topic1]: Global Warming and Air Pollution

**Topic 2: Mechanics:** *Understand Motion! A guy in a Corvette*
- Motion
- Natural Forces and Newton’s Laws of Motion
- Force, Momentum and Energy
- Conservation Laws

[Special Topic2]: Waste and Landfills

**Topic 3: Matter and Thermodynamics:** *To make the perfect pasta!*
- Matter and atom
- Phase of Matter
- Temperature and Heat
- Heat Transfer
- New Materials and Technology

[Special Topic3]: Energy Resources and Alternative Energy

**Topic 4: Electricity and Magnetism:** *Two sides of a Mirror*
- Static vs. Current Electricity
- Magnetism
- Electromagnetic Induction
- Electromagnetic waves

[Special Topic4]: Water Shortage and Contamination Problem