

HC 407 (2 Cr.) – Exploring the Magic of Physics via Hands-On Service Learning

Spring Quarter 2016

University Honors College

Oregon State University

2016.03.27

COURSE SYLLABUS

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Office Hours: by appointment

Dates: 2016.03.29-2016.06.11**Lectures:** CRN 59679: M 1400-1550**Classroom:** Graf 210

Course Description: (CRN: 59679) HC 407. EXPLORING THE MAGIC OF PHYSICS VIA HANDS-ON SERVICE LEARNING (2). Hands-on development of modules targeted at demonstrating the wonders of the STEM fields to a K-20 audience. Students will design physics-based modules with the goal to increase the interest in STEM among K-20 students at Oregon State University and in the Willamette Valley area of Oregon. A layered approach that uses service learning to bring the excitement of physics from the university research laboratory to the primary and secondary school classroom will be used. Demonstration experiments will be showcased at one of the many outreach activities that are offered through the Precollege Programs at Oregon State University. These demonstrations will be offered for incorporation into undergraduate and graduate courses as supplemental learning or as laboratory exercises.

Honors Pedagogy: The hands-on demonstration modules will ignite interest in STEM fields for both the students in the course, for the K-12 students at outreach, and for the K-20 students that use the modules in the classroom. This multifaceted approach to experience the wonders of physics will foster an ongoing growth of each individual through the role as both a mentee and a mentor. Further, the development of the demonstration modules will increase the understanding of a broad array of physics in its various venues.

Website: <https://oregonstate.instructure.com/>

(Please make sure you have access to the Oregon State Instructure website, since all course materials and announcements will be available there.)

Course Grading:

Homework	20%
Group Project	50%
Final Presentation	30%

Grade Policy: Homework received up to 24-hours late will receive 50% credit. Homework received beyond 24-hours late will receive 0% credit. Group work on homework is permitted, but each student must turn in his or her own individual assignment with a list of contributors.

Grading: If you determine that a regrade is necessary, the entire assignment will be regraded.

Final performance will be assessed a pass or no-pass grade depending on completion of the required course tasks.

Course Overview & Objectives: By the end of the course, a student will be able to do the following:

- design and build a physics-based demonstration for use in outreach;
- complete a formal report describing the details of the physics;
- produce a descriptive introduction flyer and/or poster describing the project; and
- present the demonstration project at one of the available outreach events.

Course Structure:

Communication:

The Canvas announcement tab (CRN 59679) will be used to distribute information, while email to ONID addresses will be used for course communication. All scores will be posted in the Canvas grade center.

Lectures:

Lectures will be used for the following:

- Content instruction,
- Group discussion,
- Project creation, and
- Project presentations.

Attendance in lectures is expected. You are expected to be punctual and to minimize disruptions. Cell-phones need to be off during class. Also, no use of laptops or other electronic devices for activity outside of its use in this class will be tolerated. If you miss a class, you are responsible for obtaining lecture notes from other students.

While the University is a place where the free exchange of ideas and concepts allows for debate and disagreement, all classroom behavior and discourse should reflect the values of respect and civility. Behaviors that are disruptive to the learning environment will not be tolerated. As your instructor, I am dedicated to establishing a learning environment that promotes diversity of race, culture, gender, sexual orientation, and physical disability. Anyone noticing discriminatory behavior, or who feels discriminated against, should bring it to the attention of the instructor or other University personnel as appropriate.

Group Project:

A course project will be completed by groups of one, two, or three (1, 2, 3) students depending on the number of students in the course. The project will be the major deliverable of this course, providing an opportunity for students to creative introduce K-20 students to a particular area of physics, as selected by the student. The deliverable will consist of an oral presentation during at a K-20 outreach event. Further information will be distributed in a separate document entitled Project Description.

OSU STATEMENTS:

From the Office of the Dean of Students (1995.12.13): Behaviors which are disruptive to the learning environment will not be tolerated, and will be referred to the Office of the Dean of Students for disciplinary action. Behaviors which create a hostile, offensive or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action Office.

Web link: <http://oregonstate.edu/admin/stucon/index.htm>

Statement Regarding Students with Disabilities Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Web link: <http://ds.oregonstate.edu/prospective/>

Student Conduct Code Choosing to join the Oregon State University community obligates each member to a code of responsible behavior which is outlined in the Student Conduct Code. The assumption upon which this Code is based is that all persons must treat one another with dignity and respect in order for scholarship to thrive.

For a copy of the Student Conduct Code, see http://studentlife.oregonstate.edu/sites/studentlife.oregonstate.edu/files/student_conduct_code_1.pdf.

Academic Honesty Any instances of dishonesty in academic work will be treated according to OSU Academic Regulations. The Statement of Expectations for Student Conduct is given in the OUS OAR #576-015-0020, accessible at the following link:

Web link: <http://oregonstate.edu/studentconduct/home/>.

The policy is summarized below:

Academic or Scholarly Dishonesty is defined as an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another. It includes

- (i) **CHEATING** - use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.
- (ii) **FABRICATION** - falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.
- (iii) **ASSISTING** - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).
- (iv) **TAMPERING** - altering or interfering with evaluation instruments or documents.
- (v) **PLAGIARISM** - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.

ACCESSING COE PROGRAMS AND DOCUMENTS 2015.09.08:

1. **Verify that you have a valid OSU ONID and ENGR computing account.** More information on getting access to and using ENGR computing resources is available here:

<http://engineering.oregonstate.edu/computing/gettingstarted/224>

To create an ENGR computing account (if you have not done so already),

- (a) go to <http://engineering.oregonstate.edu/teach>
- (b) select "Create a new account" at the bottom of the screen.
- (c) follow the prompts to create your ENGR account.

It is strongly suggested that you immediately log in and verify that you can access the Web, printers, etc. from your ENGR account.

If you are working from off-campus, you will need to access COE systems through the secure Virtual Private Network (VPN).

For more information and to download software to set up the VPN, please visit <http://oregonstate.edu/helpdocs/network/vpn-campus-access>

2. **You must have a laptop computer with access to wireless networks that is capable of running Microsoft Excel and MATLAB.** Access to a laptop computer is a requirement for students in the OSU College of Engineering (c.f., <http://engineering.oregonstate.edu/laptop-requirements>).

For general information about OSU COE computing resources, visit <http://engineering.oregonstate.edu/computing/personal>.

If you need help with your ENGR account, setting up your laptop, installing software, or access to the ENGR wireless network, please contact the COE Wireless Helpdesk or email support@enr.oregonstate.edu. The Helpdesk is located in Dearborn 120A and is open from 9AM - 11PM, 7 days a week. <http://engineering.oregonstate.edu/computing/personal/155>

3. **MATLAB is made available for free by OSU.** Obtain installation access using the following URL.

<http://engineering.oregonstate.edu/computing/mathworks/>

4. **Microsoft Office is made available for free by OSU.** Obtain installation access using the following URL.

<http://oregonstate.edu/office365>

5. **Accessing MATLAB and MS Office through Citrix/XenApp Web (no need to purchase Microsoft Office)** Both MATLAB and Microsoft Office (including Excel) can be accessed remotely, at no cost, from COE servers using the Citrix or XenApp Web mechanisms.

Citrix and XenApp allow you to run a wide variety of software applications on your PC or Mac system, as well as some iOS, Android and Chrome-based devices. A convenient Web-based interface makes access to the applications simple and can be accessed at <https://apps.engr.oregonstate.edu>.

You will need to install the Citrix Receiver software to use applications on the Citrix servers. Follow the directions at the site below to get started with Citrix: <http://engineering.oregonstate.edu/computing/citrix/>

If you need help with any of these steps, please contact the OSU College of Engineering Helpdesk: <http://engineering.oregonstate.edu/computing/policies/155> or <https://secure.engr.oregonstate.edu/forms/contact.php?to=support>