Physics 290: “Foundations of Physics Laboratory”

Instructor: Dean Livelybrooks (aka Dr. D.) – d livelyb@uoregon.edu
Office Hours (225 Willamette): Tuesdays 14:00-15:00, Thurs, 09:00-10:00, or by appointment

GE Contact Information and Office Hours:
Layne Bradshaw, (layneb@uoregon.edu) F11:00-12:00, Will 453, (Drop-in*: W10:00)
Rachel Klaiss (r klaiss@uoregon.edu) U14:00-15:00, Will 76 (Drop-in: M17:00)
Beth McCarr (bmccarr@uoregon.edu) M14:00-15:00, Will 77 (Drop-in: W12:00)
Saul Sun (wenqians@uoregon.edu) W14:00-15:00, Will 215 (Drop-in: H15:00)
Amy Turner (a turner2@cas.uoregon.edu) M14:00-15:00, Will 78 (Drop-in: M13:00)
*all Drop-ins are for 1 hour

Course (CRN 34788):
Lectures: Tuesdays 10:00-10:50am in 110 Willamette
Lab Sections: Thursdays 10-11:50am, 12-1:50pm, 2-3:50pm in 17 WIL
Corequisite: Physics 253; Textbook: none

Overview: This course is taught as a companion to the Foundation in Physics I sequence (Phys 251-253), and covers the topics of electricity and magnetism. While this course is designed to support the material presented in Physics 253, this laboratory course is a separate class with separate goals.

Course Goals:
1. Explore the basic principles encountered in the Foundations of Physics I course in a laboratory setting.
2. Undertake investigation by inquiry. Devise experiments to obtain useful quantities for solving problems.
3. Gain experimental skills in error analysis, error propagation, and estimation.
4. Practice extracting data from graphs and instruments.
5. Practice thinking logically and quantitatively about the world around us.

Required: We’ll use “i-clickers,” personal response systems that allow real-time polling and assessment in class. There is a 5% participation grade associated with the clickers, described further in the grading section. Each student needs one clicker, which looks like this:
Clickers can be purchased at the bookstore. Borrowing a clicker from someone not enrolled in this course will work fine as long as you always use only this clicker in class, and no one else is using it in class.

**Clicker registration:** We’ll do this through Canvas –**don’t** use iclicker.com! On the Canvas course site, you’ll see an ‘i>clicker’ option (in the left-hand column). Choose this and the “Remote Registration” to register your i>clicker for PHYS 290. This may already be done for you automatically.

**Lecture Format:**
- Discuss the upcoming lab (and any problems with the previous lab)
- Work example problems, including clicker questions for participation
- Bridge the gap between equations on a page and the physical world

**Laboratory Format:**
- *Print* out the lab from Canvas before class
- Turn in the pre-lab at the start of class
  - It is called a pre-lab is because it should be done *before* you walk into the lab
  - Late pre-labs will not be accepted
- Work in groups (ideally 3 people)
- Write up the lab report and answer questions
  - Completed lab reports are due at the following lab, a week after you do the lab (except final lab). *Bring your completed lab to the next week’s lab.*
  - A 24-hour grace period may be used once / term (except on the final lab). To turn this one late lab in, use the-turn in to the Homework box (near Willamette Room 009)

**Lab Attendance:**
Attendance at every lab section is essential. However, if you must miss lab (due to illness, e.g.) you must inform the instructor by email. You are allowed to make up maximum one (1) lab during the term. This makeup lab must occur within one (1) week of the original lab, pending the availability of the instructor or a GTF.

**Extra Credit Assignment—**Academic Research Plan:
Students can earn bonus points (up to 5%) by completing an Academic Research Plan with either Dr. Livelybrooks or with Dr. Bryan Boggs. To receive credit, a copy of the plan signed by either Livelybrooks or Boggs must be turned in. Forms for various science majors are available on the course CANVAS site. To facilitate this, Dr. D. will be available in the lab room (Will. 17) Thursday April 25th and Thursday May 9th from 10:00-11:00 for drop-ins (or if you are in that lab section). Bryan Boggs will be available on Thursday, 2-May at 12:00-13:00 and 14:00-15:00 (during afternoon lab sections).
Course grade:
Lecture Participation: 5%
Pre-labs: 15%
Lab reports and questions: 60%
Final lab report: 20%
Extra credit Acad. Research Plan +5%

Final Grade:
A 90% to 100%
B 80% to 90%
C 70% to 80%
D 60% to 70%
F lower than 60%

Course Website:
At [https://canvas.uoregon.edu](https://canvas.uoregon.edu/courses/131789) you may login and access course documents such as this syllabus. In addition, you may view announcements, course materials, and scores on laboratory worksheets at any time.

Student Conduct:
Mutual respect in class is paramount. Academic dishonesty, including cheating, fabrication, facilitating academic dishonesty, and plagiarism, devalues the reputation of our institution, its faculty, its students, and the degrees we offer**. Moreover, academic misconduct is particularly unfair for the students who do their work with integrity and honor. Violations of the student conduct code result in the incident being included on your student conduct record and can result in a failing grade on any course work related to the violation or a failing grade in the course.

Every effort will be made in this class to deter dishonesty through classroom procedures. Suspected academic dishonesty will be reported.

**For a list of other descriptions of cheating, see the Student Conduct Code.

Special Accommodations:
The AEC (Accessible Education Center) exists to help students achieve access to educational resources ([http://aec.uoregon.edu](http://aec.uoregon.edu)). If you anticipate needing special accommodation in Physics 290 please contact me as soon as possible so we may discuss your situation.
Physics 290 - *Tentative* Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Month</th>
<th>Date</th>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Tu</td>
<td>Apr</td>
<td>2</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Apr</td>
<td>4</td>
<td></td>
<td><strong>No lab this week</strong></td>
</tr>
<tr>
<td>Week 2</td>
<td>Tu</td>
<td>Apr</td>
<td>9</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Apr</td>
<td>11</td>
<td></td>
<td>Lab: Charge &amp; Electric Fields I</td>
</tr>
<tr>
<td>Week 3</td>
<td>Tu</td>
<td>Apr</td>
<td>16</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Apr</td>
<td>18</td>
<td></td>
<td>Lab: Electric Fields II</td>
</tr>
<tr>
<td>Week 4</td>
<td>Tu</td>
<td>Apr</td>
<td>23</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Apr</td>
<td>25</td>
<td></td>
<td>Lab: Capacitors</td>
</tr>
<tr>
<td>Week 5</td>
<td>Tu</td>
<td>April</td>
<td>30</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>May</td>
<td>2</td>
<td></td>
<td>Lab: Circuits 1</td>
</tr>
<tr>
<td>Week 6</td>
<td>Tu</td>
<td>May</td>
<td>7</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>May</td>
<td>9</td>
<td></td>
<td>Lab: Circuits II</td>
</tr>
<tr>
<td>Week 7</td>
<td>Tu</td>
<td>May</td>
<td>14</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>May</td>
<td>16</td>
<td></td>
<td>Lab: Magnetic Fields</td>
</tr>
<tr>
<td>Week 8</td>
<td>Tu</td>
<td>May</td>
<td>21</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>May</td>
<td>23</td>
<td></td>
<td>Lab: Inductors</td>
</tr>
<tr>
<td>Week 9</td>
<td>Tu</td>
<td>May</td>
<td>28</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>May</td>
<td>30</td>
<td></td>
<td>Final Lab: RLC Circuits</td>
</tr>
<tr>
<td>Week 10</td>
<td>Tu</td>
<td>Jun</td>
<td>4</td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Jun</td>
<td>6</td>
<td></td>
<td>Final Lab: (more time to finish RLC circuits)</td>
</tr>
<tr>
<td>Week 11</td>
<td>Tu</td>
<td>Jun</td>
<td>11</td>
<td></td>
<td><strong>Final Lab Report due by 10:00am</strong></td>
</tr>
</tbody>
</table>

The given schedule is tentative; changes will be discussed in class and posted online.

**Important Dates:** ([academic calendar](#))

- Apr 6th: Last day to drop without a “W”
- Apr 7th: Last day to add a class
- May 19th: Last day to withdraw (drop with a “W”) or change grading option to P/N