Biosc 1860: Course Information (2131)

- The lab work for BIOSC 1860 consists of groups of interrelated experiments and an independently designed special project. During the semester you will:
  - learn techniques and methods commonly applied to study of microorganisms
  - be introduced to major sub-disciplines in the field
  - learn how to design some experiments
  - propose and investigate some hypotheses
- There will be group discussions of the experiments in some laboratory classes.
- Occasionally you will hand in a culture you have purified or data you have gathered, so that we can review your work.
- In addition to the two laboratory sessions per week, this course also includes a one hour recitation session. The recitation will be used for:
  - special instruction
  - Science2012
  - review
  - the midterm exam
  - oral presentations
  - preparation for the special projects
  - presentations of the special projects
- The schedules for the laboratory sessions and the lecture/recitation sessions will be modified as necessary to meet the needs of the class.
- Information about course policies and tables listing assignment due dates and class schedules are given on the biosc 1860 wiki: Dirt(2131).

Class Meeting Times:

- The lab meets in 112 Clapp Hall, Tuesdays and Thursdays 9:00am to 11:50am
- There is a weekly recitation in 120 Clapp Hall, Fridays from 10:00 to 10:50 am. Attendance at the recitation is required.
The Experiments:

- Most of the time, you will be conducting two or more experiments at once. This is standard practice in microbiology, because what we do mostly is inoculate cultures for some test or experiment, then wait for them to grow up for use or results interpretation. To use our time efficiently, we must do more than one thing at a time, so we aren’t just twiddling our thumbs while things grow. The coursework is loosely grouped into the following sections:
  - Cultivation-Dependent Community Analysis
  - Cultivation-Independent Community Analysis
  - Bioinformatics Analysis
  - Molecular Evolution: phylogenetic analysis
  - Special Project
    - poster preparation
    - poster presentation
**Course Material:**

- There are two **required** manuals for the course. Other materials will be supplied as handouts in class, on CourseWeb, or via the Dirt at Pitt (2131) wiki.

- The text that is required in BIOSC 1850, or any other comparable Microbiology textbook, should be used to supplement the theory, and for any background review. Highly recommended.

- Together these materials provide background material and protocols adapted from the technical literature in microbiology, some from other published sources, and some developed specifically for your experiments.

- It is necessary for you to realize that in using these sources you may not perform an experiment exactly as it appears in your texts. Rather you will use these sources as you would a cookbook: the source provides a recipe that you adapt to your own needs. We may want to use a technique described in the manuals for *E. coli* in an experiment we are doing with a different kind of bacteria.

- If you are considering a career in laboratory biology, it is essential for you to become comfortable with this approach to experimental protocols. The lack of published procedures that are specifically designed for your own needs is a situation you will encounter frequently as you pursue your careers. Learning to use protocols thoughtfully and imaginatively is part of your preparation for such careers, and class sessions will focus on this skill.
Good laboratory work develops as a combination of many different skills. If you are better at the lab bench than at the examination desk, we want your grade to give you credit for that. Consequently, our evaluation of your coursework will proceed at several levels.

1. **Preparation for class:** It is crucial that you are coming to the laboratory having read the day’s protocol(s). If we find that many in the class are not doing this, we will start giving quizzes covering the day’s procedures. Should this happen, we will adjust score contributions to the final grade so that the quizzes would be a significant component. We would not do this without first telling you that it is going to happen.

2. **Examinations:** There will be a 2 one-hour midterm examinations (during a Friday recitation/lecture session) and no final examination. The examination dates are given in the recitation/lecture schedule. If, and only if, you provide documentation for an acceptable excuse for missing an exam, will you be allowed to take a make-up exam. Documentation must be presented within one week of the missed exam. **All make-up exams will have a combination of written and oral components.**

3. **Practical examinations:** there will be one laboratory practical examination and a short written exam on microbiology–type calculations skills. Please see the schedule for the dates of these exams. These examinations may cover serial dilutions, spread plating, staining, PCR, and other techniques covered in class; and quantitative problems similar to the ones given in the Microcosm manual, used in class, and included on the diagnostic lab math quiz. Information on the practical exams is posted on the Dirt(2131) wiki. These practical exams will be graded numerically.

4. **Laboratory work assignments:**
   - On specific occasions, you will hand in cultures or other materials you have prepared during the course. These will be given a numerical grade, with criteria for scoring posted in the assignments section of the Dirt at Pitt (2131) wiki.
   - There will be both pre- and post-lab written assignments.
   - There will be both pre- and post-lab quizzes.

5. **Poster presentations:** In consultation with the instructors, groups of 3 or 4 students will work together on the I, Microbiologist microbial ecology and molecular evolution project. The poster presentation will be a compilation of the experiments, data, results, and conclusions from the semester long project. The poster presentation grade will also include the quality of your wiki work, general laboratory competence and engagement, and any oral presentations.

6. **Oral presentations:** There will be an informal, impromptu oral presentation focusing on some topic from the course experiments or on some preliminary work on your special project; and a planned, formal presentation dealing with your special project.

7. **Necessary adjustments:** Biosc 1860 will give you a real research experience. As a consequence, inevitably there will be modifications to the schedule of experiments that may lead to adjustments in the grading criteria. You will be apprised of any changes in student evaluations in a timely manner. Please be aware that I strive diligently to make sure that all of your assessments will be fair and true reflections of your performance and competence.
COURSE GRADE

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<tbody>
<tr>
<td>Practical Examinations</td>
<td>17.5%</td>
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<tr>
<td>Materials, Assignments &amp; Quizzes</td>
<td>25%</td>
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<tr>
<td>Poster Presentation (incl. oral presentations &amp; wiki work)</td>
<td>32.5%</td>
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<tr>
<td>Examinations</td>
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