Bio 442: General and Comparative Physiology
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Office hours: TTh 9:30 - 11:30; Th 2:00 - 5:00; W 3:00 - 5:00
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Biology 210: Biological Techniques
Course Outline & Syllabus

Course Description:

This course is designed to teach you how to do biological research. There are two basic facets to this task. Foremost, the laboratory exercises and instructor aims to teach you some of the most important, cutting edge, most often used, generally applicable -- in short "important" biological research methods and techniques. Such equipment, methodology and/or analyses will serve you wherever you go to do research in the future be it a future course or research program you're involved in at Chaminade or research you may do elsewhere in a summer program, graduate school, medical school, etc. That is, this course is designed to set a foundation for your future research/laboratory experiences. The second aim of this course, which is related to the first but is founded more in practicality, is to teach you *how to use what Chaminade has to offer* and *how to do research and report* **it in general We want you to become proficient with our lab at Chaminade and comfortable with deciding on, conducting and reporting a research project. In order for you to get the most out of your biology education you'll probably want to get the most out of the lab at Chaminade and this course will get you started doing that.**

Your **objectives for the course should be as follows:**

Students Course Objectives:

1. **To learn where things are in the lab.**
2. **To learn how to care for and maintain the lab.**
3. **To learn how to be safe in the lab and obey all of the lab safety precautions.**
4. To **learn what the things in the lab are. This includes learning what things do, what they do not do, how they are cared for, and where they should be used (if applicable).**
5. **To learn some of the basic, most often used, most generally applicable: tools, techniques, methodologies and methods of analysis used in biological research.**
6. **To become comfortable and proficient working in the lab, the field, and on the computer for those tools, techniques, etc. encountered in the lab.**
7. **To learn how to acquire, learn about and implement a new tool or technique.** Le. **you should learn from this course how you may broaden your repertoire of research capabilities in the future should you decide you want to do so.**
8. **To learn what scientific integrity is and why it is important in doing/reporting science.**

Course Mechanics:

Grading:

Activi	% of Grade
Participation	10%
Homework	**20%**
Notebooks	**20%**
Practical I	**25%**
Practical 11	**25%**

Notebooks: You will be keeping a laboratory notebook throughout the course. The notebook will be collected and graded on the days of each of the Practicals. Notebooks should contain the following for each of the labs: (1) Describe the purpose, materials and methods for each lab. (2) Describe what you learned from each lab. (3) Discuss any conclusions reached from the laboratory exercises. (4) Include any handouts or lab-related documents, drawings, graphs, data sheets that were part of the lab. (5) Answer all questions posed in the lab.

Notebooks should be neat. Notebooks should have a table of contents. Each lab should be presented as a unit in the notebook - that is, don't have stuff from a single lab scattered throughout the notebook, keep it all together in your notebook. Notebooks should be of a type that allows you to easily add papers TO them. I suggest a three-ring notebook or folder that allows you to assemble papers together.

Lab Practicals: There will be two practicals during the semester. Both practicals will consists of lab-practical type questions and more exam-like written questions. All of the questions will be based on the laboratories (and any materials associated with them) that occurred prior to the practical. The second practical will include all labs performed after the first practical; it will therefore NOT be cumulative.

Quizzes: Dr. Gail may give you these prior to each lab as a "motivational tool" just to keep you on your toes and "hip" for the lab to be performed each Monday. If you guys seem prepared and ready-to-go for each lab then we will not have any quizzes. If Dr. Gail is "forced" to implement the quiz "option" then your scores will be included along with your homework scores.

Homework: Many of the labs will include a homework assignment which is to be completed and turned in at the beginning of the following lab. Assignments will vary as they are tailored ton the specific goals of each lab.

Absences: Do not miss this class without an excuse. Since we only meet 13 times the entire semester a single unexcused absence effectively means you've missed almost 10% of the course!! That's the same as missing 10 lectures of a course meeting M-W-F! So missing one lab without an excuse will definitely hurt your grade. If you present some form of a document signed by your doctor then an absence can be excused. If you are experiencing some genuinely stressful situation other than illness (death in the family, abuse, pregnancy, etc.) let Dr. Gail know and we'll see what we can do about it. Athletes -- if you have to miss for a game or travel let your instructor know prior to your absence.

Extra Credit Opportunities: You may have the opportunity during the course to do some extra-credit activities. Activities may take the form of Biomath problems: which will enhance your ability to analyze data and help you build confidence in your quantitative self. I may also make it possible for you to earn extra credit by participating in some service learning activities in the field that teach you some important data-gathering techniques. I will let you know about these as the course proceeds.

BI **210:** Course Schedule:

Date	Laboratory Topic
1/24/00	Introduction & Course Mechanics; Short Lab: Designing Research Projects
1/31	Disposition of Equipment and Materials
2/7	Ordering & Receiving Supplies
2/14	Lab and Equipment Care and Maintenance
2/21	N O C L A S S President's Day
2/28	Lab Safety
3/6	Making Solutions
3/13	EXAM /PRACTICAL I--Notebooks Due!
3/20	Finding, Collecting & Transporting Specimens
4/3	Animal Care and Maintenance; Plant Care and Maintenance
4/10	Some Important Instruments: How they Work and what they do
4/17	Data Entry and Data Management; Computers, Videos & Laser Disc Use; Scientific Integrity
4/24	Proper Scientific Figures, Graphs, Tables, Photographs and Diagram
511	EXAM /PRACTICAL 1 1 --Notebooks Due!