

BIOL 4304 Undergraduate Research in Biology
Texas A&M University San Antonio, College of Arts and
Sciences

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Class Meeting Times and Location(s):

Mandatory Weekly Lab Meeting (1.5 hrs)

- Students will be expected to attend the weekly lab meeting
- At these meeting we will discuss:
 - Tasks for the week
 - Current progress towards project goal
 - Peer-reviewed literature associated with the projects
 - Any problems we are encountering (BRAIN STORMING SESSION)

Lab and/or Field Work – Mandatory but date/time varies according to research project

- Students will be expected to invest at least 9 hours of supervised hours/week on a joint project
- Research will consist of either laboratory work or field work depending on the project

Literature Work – Mandatory but date/time varies according to research project

- Students will be expected to read peer-reviewed journal articles as assigned.
- Student will be expected to find journal articles are their own if asked.
- Students will share these papers with their peers and with me.
- We will discuss these papers informally one-on-one or as a group.

Scientific Presentation – Mandatory – location dependent upon conference locale

- Students will present their research at a scientific conference.
- Student can choose and oral or poster presentation
- The conference can be local, regional, or national

Required Materials:

- Access to scientific data bases
- Outdoor clothing
- Lab notebook and field notebook
- Signed safety forms (lab and field)

Learning objectives

1. Student will learn the scientific thought process required to develop a research project
 - a. Literature review
 - b. Asking questions and which types of questions can be answered in a specific timeframe
 - c. What equipment is needed
 - d. What permissions are needed for field research
2. Student will learn scientific lab notebook maintenance
3. Student will learn how to collaborate on scientific projects
4. Student will learn how to analyze data appropriate to their project
5. Student will learn how to convey the scientific information they collected to both a broad audience and a scientific audience
6. Student will learn how to construct a manuscript based on their research

Course Content

- **Attendance to Lab Meetings** – you must attend every lab meeting as we will be scheduling them to accommodate everyone’s schedule.
- **Lab Meeting Contribution** – I expect everyone who is involved in the lab to contribute at meetings. I may have papers for you to read, I may ask you to update us on your progress, I may ask you to lead a discussion.
- **Lab Work** – I will be looking at your consistency, work ethic, contributions, participation. Essentially if you are a contributing member to our lab team, then this should not be a problem. If I see a problem, I will let you know in time for you to fix it.
- **Data Entry & Analysis** – We will work together to develop data entry skills and analysis skills in preparation for your scientific presentation
- **Preparation of Scientific Presentation** – I will be working with you to develop either a poster or a power point presentation.

Grading

This class is a “real-world” learning experience and **the time and effort you put into this research experience is above and beyond what is expected in a typical 3-credit course**; this is one of the reasons why you were asked to apply and why this is not an open-enrollment course. Thus, I will not assign grades based on a point system. Rather, if you genuinely exhibit the following characteristics during the semester and you fulfill the course content objectives above, you should do well in this course. If I see faltering in any one of these areas, I will let you know so that you have time to remedy the problem, again this is a real-world science environment and I expect you to perform in that manner.

- Hard work - working when you are in the lab, not just chatting.
- Dedication – attendance at laboratory meetings
- Reliability – come to lab/field when scheduled (because I will always work with your schedule and the schedule of the animals, this should be do-able)
- Participation – talk and provide feedback during lab meetings
- Organization
- Scientific integrity – do not falsify any information. Even “bad” data is good data!
- Diligent in lab notebook recording according to methods learned.
- Effort in writing your manuscript and power-point presentation