



# **BIOL 4304 Undergraduate Research in Biology**

## **Biology Program**

### **Department of Life Sciences**

#### **Instructor Information**

**Instructor:** J. Rodolfo Valdez Barillas (Call me Dr. Valdez)

**Email:** [jvaldezb@tamusa.edu](mailto:jvaldezb@tamusa.edu)

**Phone:** 210-784-2220 (cell: 210-441-0444)

**Office:** Science & Technology Building room 311L

**Ecology Research Lab:** Science & Technology Building, room 361

**Greenhouse space:** East of Campus Police Building

#### **Course description:**

Research experience in biology is a three-credit course that gives our students the opportunity to conduct field and/or laboratory ecology research during each academic semester. Students submit a project proposal, conduct their research, and turn in a final project report. The course includes university-mandatory training and is tailored to your research project and personal interest needs. Students are expected to present their results at a research symposium or conference via a poster or an oral presentation.

#### **Course Objectives**

1. Formulate testable research questions and hypotheses
2. Determine realistic goals and objectives
3. Conduct literature research on the best methods to be used for collecting and analyzing data
4. Engage in science-based discussion with peers and advisors
5. Design experiments based on available time and resources
6. Stay on task and assess project progress
7. Learn and follow best practices in both the field and laboratory
8. Use materials and equipment in a laboratory and field setting
9. Troubleshoot challenges using critical thinking and teamwork
10. Present research findings orally and publish them following a scientific publication format

#### **Recommended resources**

- All laboratory equipment and supplies used in the study will be provided by the faculty mentor

- Students should bring their own lab coats.
- Personal Protective Equipment (PPE) will be provided by the instructor
- Students will need to bring adequate clothing for outdoor activities
  - Slacks, jeans, no leggings
  - Closed shoes are appropriate for off-road walking or hiking (tennis shoes are OK)
  - Long-sleeved shirts are recommended as a second layer
  - Hat, cap, and bandana are also recommended
  - A water bottle is mandatory for all outdoor work
  - Sunblock and medicine needs are the students' responsibility
- Student will also need to use their personal vehicle for work conducted outside of campus

## **Course policies**

**Attendance:** You are required to attend regular lab meetings and fulfill the minimum hour requirement per week for work conducted in the laboratory or in the field. During the development of the project proposal, literature review research, and data analysis, students may conduct work remotely.

**Communication:** All communication and inquiries to the instructor should be e-mail to [jvaldez@tamusa.edu](mailto:jvaldez@tamusa.edu). Cellphone communication should include texting as the first choice, before calling. A communication board and notebook will be available in the laboratory to notify other students or the instructor when a consumable is running low, something needs to be replaced, or purchased. Regular bi-weekly meetings are required, and weekly communication is expected. E-mail communication is important, and replies should not wait longer than 48 hours.

**Netiquette:** Avoid using inappropriate language with others verbally or in written form. All communications, both written and verbal, may be recorded during every online session.

**Lab notebook:** Student will be provided with a laboratory notebook. The notebook belongs to the laboratory; it may be borrowed and used for work outside the lab or at home, but it is expected to be returned. If shared, laboratory notebooks must always stay in the lab.

**Mentee and Mentorship plan agreement:** Student and Mentor will go over a work plan for the semester and will develop a compact (informal academic contract) of goals and objectives developed by the mentee and mentor. These will be assessed bi-weekly and modified as needed based on the Mentee and Mentor's mutual agreement

**Project Proposal:** The student will have two weeks to develop a project proposal with the guidance of the faculty mentor. Without the project proposal completed, a student cannot initiate their research project

**Lab safety and policy:** Student will read and become familiar with laboratory safety and procedures for the laboratory work or fieldwork required during their project.

**Training:** The student needs to complete all necessary training in order to initiate their project.

**Peer Mentorship:** Peer mentorship is a pedagogical strategy commonly used between working partners or collaborators. The goal is that one peer provides training and guidance to another student. However, peer mentors do not have supervisory roles over each other, nor is one expected to abide by the other's expectations if the faculty mentor has not determined such expectations.

**Field and lab work:** Students will set up lab and field projects and conduct laboratory analysis from field samples or laboratory experiments. Students are expected to dedicate 4 hours a week to their projects. You will spend more time with your faculty mentor in the field or in the lab, helping you set up your research. Your faculty mentor will gradually let you work on your own as you get a good grasp of your work. Work hours are flexible and can be determined every week. We will try to always do field work in pairs, so lab and field work hours need to be well coordinated.

**Research Presentation:** You will have the chance to present at the A&M Student Research Symposium (**Spring 2022**), and other meetings (**summer 2022**)

- Students can showcase their research with oral presentations, poster presentations, or roundtable discussions in a synchronous format for the one-day conference. If students have a research project they would like to present, a 150-word abstract must be submitted by TBA.
- Once accepted, the final poster or presentation must be submitted digitally by TBA.

**Research proposal outline:**

**Introduction:**

- Research question(s)
- Objective and Hypothesis
  - Research goal and objectives
  - Personal goal and objectives
- Background and justification

**Methods**

- Materials needed
- Methods and Procedures
- Experimental design
  - Generate table
- Data Analysis (includes statistical analysis)
- Timeline (**the timeline is specific for each project, following a chronogram format for three months**)
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**Results**

- Expected Results

**Final Report outline:****Summary****Introduction:**

- Background and justification
- Objective and Hypothesis

**Methods**

- Study site description
- Experimental procedures
- Materials and equipment needed for the experiment
- Data Analysis

**Results**

- Describe results and present main findings
- Include Tables or Figures with their corresponding descriptive legend on each figure
- Interpretation of results

**Discussion**

- Interpretation of results
- Compare results with previous research
- Explain the relevance of the main findings

**Conclusion**

- Take-home message
- Lessons learned

**Grading**

- Weekly participation (10pts)
- Mentorship plan (10pts)
- Research proposal (20pts)
- Research notebook/journal (20pts)
- Final project report (20pts)
- Research Presentation (poster, article format, PowerPoint presentation) (20 %)

A = 90 – 100 points

B = 80 – 89.9 points

C = 70 – 79.9 points

D = 60 – 69.9 points

F = <59.9 points

## IMPORTANT POLICIES AND RESOURCES

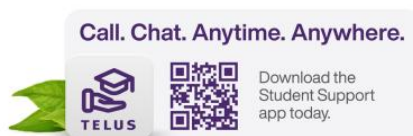
Academic Accommodations for Individuals with Disabilities: Texas A&M University-San Antonio is committed to providing all students with reasonable access to learning opportunities and accommodations in accordance with The Americans with Disabilities Act, as amended, and Section 504 of the Rehabilitation Act. If you experience barriers to your education due to a disability or think you may have a disability, Disability Support Services is located in the Central Academic Building, Suite 210. You can also contact us via phone at (210) 784-1335, visit us <https://www.tamusa.edu/Disability-Support-Services/index.html> or email us at [dss@tamusa.edu](mailto:dss@tamusa.edu). Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Support Services as soon as possible.

Academic Learning Center: The Academic Learning Center provides free course-based tutoring to all currently enrolled students at Texas A&M University-San Antonio. Students wishing to work with a tutor can make appointments through the Brainfuse online tutoring platform. Brainfuse can be accessed in the *Tools* section of Blackboard. You can contact the Academic Learning Center by emailing [tutoring@tamusa.edu](mailto:tutoring@tamusa.edu), calling (210) 784-1307, or visiting the Central Academic Building, room 202.

Counseling/Mental Health Resources: As a college student, there may be times when personal stressors interfere with your academic performance and negatively impact your daily functioning. If you are experiencing emotional difficulties or mental health concerns, support is available to you through the Student Counseling Center (SCC). To schedule an appointment, call 210-784-1331 or visit Madla 120. All mental health services provided by the SCC are **free and confidential** (as the law allows). The Student Counseling Center provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services. For more information on SCC services, visit <http://tamusa.edu/studentcounseling>

***Crisis support is available 24/7 by calling the SCC at 210-784-1331.***

Additionally, the TELUS Student Support App provides a variety of mental health resources to including support for in-the-moment distress, an anonymous peer-to-peer support network, mental health screenings, podcasts, and articles to improve your mental wellbeing.



Emergency Preparedness: JagE

Alert is Texas A&M University-San

Antonio's mass notification. In the event of an emergency, such as inclement weather, students, staff and faculty, who are registered, will have the option to receive a text message, email with instructions and updates. To register or update your information visit: <https://tamusa.bbcportal.com>

More information about Emergency Operations Plan and the Emergency Action Plan can be found here: <https://www.tamusa.edu/about-us/emergency-management/>

Download the SafeZone App (<https://safezoneapp.com/>) for emergencies or call (210) 784-1911. Non-Emergency (210) 784-1900.

Financial Aid and Verification of Attendance: According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended by the published Census Date (the first week of class). Any student receiving federal financial aid who does not attend before the published Census Date (the first week of class) will have their aid terminated and returned to the DoE. Please note that any student who stops attending at any time during the semester may also need to return a portion of their federal aid.

Writing, Language, and Digital Composing Center: The Writing, Language, and Digital Composing Center supports graduate and undergraduate students in all three colleges as well as faculty and staff. Tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Our language tutors support students enrolled in Spanish courses and students composing in Spanish for any assignment. Our digital studio tutors support students working on digital projects such as eportfolios, class presentations, or other digital multimedia projects. Students can schedule appointments through JagWire under the Student Services tab. Click on "Writing, Language, and Digital Composing Center" to make your appointment. The Center offers face-to-face, synchronous online, and asynchronous digital appointments. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website at <https://www.tamusa.edu/academics>.  
Meeting Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to submit a CARE referral (<https://www.tamusa.edu/university-policies/Student-Rights-and-Responsibilities/file-a-report.html>) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to direct you to available resources.

Office Hours: All faculty with teaching assignments should include regularly scheduled office hours on each syllabus in addition to "by appointment." Please review your appointment letter for the number of weekly office hours you are expected to set. Regularly scheduled office hours should also be posted outside your office door (where applicable).

Military Affairs: Veterans and active-duty military personnel are welcome and encouraged to visit the Office of Military Affairs for any questions involving federal or state VA Education Benefits. Visit the Patriots' Casa building, room 202, or contact the Office of Military Affairs with any questions at [military.va@tamusa.edu](mailto:military.va@tamusa.edu) or (210)784-1397.

Religious Observances: Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their traditions. Under the policy, students are provided with an opportunity to make up any examination, study, or coursework requirements that may be missed due to a religious observance, provided they notify their instructors before the end of the second week of classes for regular session classes.

The Six-Drop Rule: Students are subject to the requirements of Senate Bill (SB) 1231, passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student's GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as "F" grades and will impact the student's GPA.

Statement of Harassment and Discrimination: Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equal opportunity, and human dignity. To fulfill its multiple missions as an institution of higher learning, A&M-San Antonio encourages a climate that values and nurtures collegiality and the uniqueness of the individual on our campus and within our state, nation, and world. All decisions and actions involving students and employees are to be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance with applicable federal and state law, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, or pregnancy/parenting status. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the University's Civil Rights Officer at 210-784-2061 or [titleix@tamusa.edu](mailto:titleix@tamusa.edu). Texas A&M University-San Antonio faculty are committed to providing a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex- or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking based on sex, know that help and support are available. A&M-San Antonio's Title IX Coordinator can support those impacted by such conduct in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the Title IX Coordinator. Please be aware that all A&M-San

Antonio employees (other than those designated as confidential resources, such as counselors and trained victim advocates) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about a situation of sexual harassment, sexual violence, or other related sex-based misconduct, the faculty member must share that information with the university's Title IX Coordinator ( [titleix@tamusa.edu](mailto:titleix@tamusa.edu), 210-784-2061, CAB 439K). If you wish to speak to a confidential employee who does not have this reporting requirement, you can contact the Student Counseling Center at (210) 784-1331 or visit them in Madla 120.

Pregnant/Parenting Students: Texas A&M-San Antonio does not require a pregnant or parenting student, solely because of that status or issues related to that status, to (1) take a leave of absence or withdraw from their degree or certificate program; (2) limit the student's studies; (3) participate in an alternative program; (4) change the student's major, degree, or certificate program; or (5) refrain from joining or cease participating in any course, activity, or program at the University. The university will provide such reasonable modifications to pregnant students as would be provided to a student with a temporary medical condition that is related to the health and safety of the student and the student's unborn child. These could include maintaining a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals and their unborn child; excused absences because of illness or medical appointments; modified due dates for assignments; rescheduled tests/exams; taking a leave of absence; and being provided access to instructional materials and video recordings of lectures for excused absences, if these would be provided to any other student with an excused absence. Pregnant/parenting students are encouraged to contact the Title IX Coordinator with any questions or concerns related to their status ([titleix@tamusa.edu](mailto:titleix@tamusa.edu); 210-784-2061; CAB 439K). Texas A&M-San Antonio has also designated the Title IX Coordinator as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18 years of age. The Title IX Coordinator can provide students with information regarding support services and other resources.

Young Jaguars: can support parenting students with daycare who meet this criteria: Must be enrolled in classes at TAMUSA in the current semester. Must be Pell eligible or a single parent. They serve children ages 3 to 12 years old. Children must be enrolled in Pre-K-3 through 6th grade. [youngjaguars@tamusa.edu](mailto:youngjaguars@tamusa.edu) (210) 784-2636

Students' Rights and Responsibilities: The following statement of students' rights and responsibilities is intended to reflect the philosophical base upon which University Student Rules are built. This philosophy acknowledges the existence of both rights and responsibilities, which is inherent to an individual not only as a student at Texas A&M University-San Antonio but also as a citizen of this country.

#### *Students' Rights*

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no University rule or administrative rule that in any way abridges the rights of freedom of speech, expression, petition and peaceful assembly as set forth in the U.S. Constitution.
2. Each student shall have the right to participate in all areas and activities of the University, free from any form of discrimination, including harassment, on the basis of race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, gender identity, gender expression, and pregnancy/parenting or veteran status in accordance with applicable federal and state laws.
3. A student has the right to personal privacy except as otherwise provided by law, and this will be observed by students and University authorities alike.
4. Each student subject to disciplinary action arising from violations of university rules shall be assured a fundamentally fair process.

#### *Students' Responsibilities*

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty, and administration.



2. A student has the responsibility to be fully acquainted with the published University Student Rules found in the Student Handbook, [Student Code of Conduct](#), on our website, and University Catalog, and to comply with them, as well as with federal, state, and local laws.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire University community.
4. A student has the responsibility to recognize the University's obligation to provide a safe environment for learning.
5. A student has the responsibility to check their university email for any updates or official university notifications.

We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation, or disability. Conduct that infringes on the rights of another individual will not be tolerated.

Students are expected to exhibit a high level of honesty and integrity in their pursuit of higher education. Students engaging in an act that violates the standards of academic integrity will find themselves facing academic and/or disciplinary sanctions. Academic misconduct is any act, or attempt, which gives an unfair advantage to the student. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered as academic misconduct. For more information on academic misconduct policies and procedures, please review the Student Code of Conduct (<https://www.tamusa.edu/university-policies/student-rights-and-responsibilities/documents/Student-Handbook-2022-23.pdf>) or visit the resources available in the OSRR website (<https://www.tamusa.edu/university-policies/student-rights-and-responsibilities/academic-integrity.html>).

There are situations and contexts within this course where you may be asked to use artificial intelligence (AI) tools to explore how they can be used. Outside of those circumstances, you should not use AI tools to generate content (text, video, audio, images) that will end up in any student work (assignments, activities, discussion responses, etc.) that is part of your evaluation in this course. Any student work submitted using AI tools should clearly indicate with attribution what work is the student's work and what part is generated by the AI. In such cases, no more than 25% of the student's work should be generated by AI. If any part of this is confusing or uncertain, students should reach out to their instructor for clarification before submitting work for grading. Use of AI-generated content without the instructor's permission and/or proper attribution in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

Use of artificial intelligence (AI) tools, including ChatGPT, is permitted in this course for students who wish to use them. To adhere to our scholarly values, students must cite any AI-generated material that informed their work (this includes in-text citations and/or use of quotations, and in your reference list). Using an AI tool to generate content without proper attribution qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

<https://apastyle.apa.org/blog/how-to-cite-chatgpt>

#### Important Dates: Fall 2025 Regular 16-Week Session

August 25	First day of class
September 1	Labor Day Holiday – No classes
September 10	Census Date
November 14	Last day to drop with an automatic "W"
November 25	Last day to withdraw from the University
November 26	Study Day – No classes
November 27-29	Thanksgiving Holiday – No classes
December 4	Last day of classes
December 5	Study Day – No classes
December 6-12	Final exams



December 16      Commencement

*The complete academic calendar is available online:* <https://www.tamusa.edu/academics/academic-calendar/index.html>