

GENETICS - LAB
BIOL 2116
Texas A&M University-San Antonio, College of Arts and Sciences
Fall 2026 Syllabus

LAB:
03L Thu 11:00 am-1:45 pm
in MADLA 322

Course Instructor of Record: Utpal Smart
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Office: Science & Technology 311B
Phone: (210) 784-2676

Course description: This course provides students with practical, hands-on experience with fundamental principles and techniques in genetics. Through a series of laboratory exercises, students will explore the mechanisms of heredity, genetic expression, and molecular analysis.

Course objective: In the Genetics lab, students will perform assignments and experiments that reinforce and enhance the material learned in lecture. Students will learn skills and knowledge currently utilized in research laboratories. Additionally, students will write a short scientific report to learn and practice scientific writing.

Grading:

In-lab & post-lab assignments	500pts
Excel spreadsheet from Fly Linkage Project	100pts
Lab report from Fly Linkage Project	200pts
TOTAL	800pts

Deadlines: Late papers and worksheets may not be accepted or may be subject to a 10% grade reduction per day late. The instructor will determine the penalty for late work.

Excel spreadsheet and lab report: You will carry out a multi-week fly cross to generate data you will use to analyze linkage between the *yellow* and *white* genes in *Drosophila*. The first part of the assignment is to turn these data into a graph, and the second part is to carry out a Chi-square analysis and write it up independently (not as pairs) as a short, formal lab report.

In-lab & post-lab assignments: Students will frequently be asked to fill out worksheets and answer questions during and after labs. In general, assignments will be due by midnight the day of the next lab.

NOTE: Although you will collaborate in pairs because of how in-person labs are arranged, all work you submit should be your own. Copying of assignments between lab partners or other students will be treated as plagiarism. This is **especially** true of the fly lab report.

Communication: All students are expected to access Blackboard for course updates and course materials. I am available if you need clarification on course materials and assignments. Email is the best way to contact me.

Lab Schedule (subject to change at the discretion of the instructor)

Week	Week beginning	LAB TOPICS	Quiz or Assignment/Participation
1	Aug 24	No Lab	No Lab
2	Aug 31	Lab Safety Basic quantitative skills	Lab Safety Acknowledgment Form and Quantitative skills assignment due by start of the next lab meeting
3	Sep 7	Mendelian genetics of corn & Chi-square	Chi-square assignment due by start of the next lab meeting
4	Sep 14	Intro to Flies – identify flies, learn how to make media. Microscopes (dissecting scopes) Discuss writing & analysis assignments	No Assignment Due
5	Sep 21	Pipetting Fly lab: Start fruit fly experiment (P cross)	Pipetting assignment due by start of the next lab meeting
6	Sep 28	Standard curves & electrophoresis Fly lab: Remove parental flies	Electrophoresis assignment due by start of the next lab meeting
7	Oct 5	DNA isolation from fruit fly tissue Fly lab: Begin week-long removal of F1 flies (keep females, morgue males)	DNA isolation assignment due by start of the next lab meeting Open lab periods to collect F1 flies during the week (required).
8	Oct 12	DNA isolate quality control and quantification Fly lab: Set up backcross	DNA isolate qualification and quantification assignment due by start of the next lab meeting
9	Oct 19	PCR of fruit fly gene Fly lab: Remove back-cross parents	PCR assignment due by start of the next lab meeting
10	Oct 26	PCR verification & Spin Column PCR Purification Fly lab: Count and score back-cross progeny	Clean up and sequencing assignment due by start of the next lab meeting
11	Nov 2	Data analysis lab and writing assignment walk-through Fly lab: Count and score back-cross progeny	Final Fly project Excel spreadsheet due by start of the next lab meeting Start Genious sequence/ bioinformatics Blackboard assignment
12	Nov 9	Sequence visualization/editing & alignment in UGENE lab 1	Initial draft of fly project report due by start of the next lab meeting

13	Nov 16	Sequence visualization/editing & alignment in UGENE lab 2 Ask questions about Fly Lab Report	UGENE assignment due by start of the next lab meeting
14	Nov 23	Thanksgiving holiday – No lab	Thanksgiving holiday – No lab
15	Nov 30	Open lab for feedback on lab report	Final version of lab report due by 11:59 PM 7th Dec

Course Policies

Attendance Policy

You are expected to attend each lecture and participate in exercises and discussions in this forum. While attendance itself is not graded, it is strongly tied to how well you will do in the course. In my experience, students who miss many classes almost always struggle to pass, not because absences are penalized directly, but because the exams draw heavily on material developed in class, and students who miss that material consistently perform poorly on exams. Attending regularly is therefore one of the most reliable things you can do to succeed in this course.

Learning Environment

Please be punctual. Late entry into class is disruptive to your fellow students and me. I will do my best to facilitate learning by respecting you and your time, and I expect you to return the favor. Talking, texting, e-mailing, preparing for other courses, etc. during class is disrespectful; please refrain from using handheld devices during lecture. I understand that emergencies occur, so if you are in a situation that may require your attention during class, please let me know ahead of time and set your phone to vibrate, so you can exit with minimal disturbance. I understand that some students prefer to take notes on their laptops. However, except where required as an approved accommodation, I reserve the right to suspend laptop use if, in my judgment, they are more of a hindrance than an asset.

If I am confusing or unclear, let me know. Don't hesitate to ask questions. If a concept is unclear to you, odds are other students in the class are struggling with the concept as well.

Assigned Readings

Please read the assigned material. It will improve your comprehension and will likely reduce the amount of 'cramming' that you need to do to prepare for exams.

Policy on Calculator Use

While a working knowledge of basic algebra is sufficient for this course, you will occasionally be asked to answer mathematical questions during homework assignments and exams. Very few modern scientists conduct calculations without the aid of a computer or calculator. Therefore, you are allowed and encouraged to use a calculator on assignments of all types, including exams. However, for exams, use will be restricted to simple calculators without data storage or streaming capabilities.

Important Policies and Resources

University Email Policy and Course Communications

All correspondence between professors and students must occur via university email accounts. You must have your Jaguar email account ready and working. If it is not working, contact the help desk at

helpdesk@tamusa.edu or at 210-784-HELP (4357). If you don't hear back within 48 hours, contact them again. They have many requests during the first part of the semester, so you may need to follow up with them.

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 at the website or email us at dss@tamusa.edu. All students are encouraged to discuss their academic accommodation with Disability Support Services and their instructors as soon as possible.

Academic Learning Center

All currently enrolled students at Texas A&M University-San Antonio can utilize the Academic Learning Center for subject-area tutoring. 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, calling (210) 784-1307, or visiting the Central Academic Building, room 202. Online tutoring is also available for after hours and weekend assistance.

While tutoring hours may change based on tutor schedules and availability, the current tutoring hours for MATH in the ALC are as follows:

Day	Appointments available	Walk-in Tutoring (no appointment needed)
Monday	8 am – 6 pm	9 am – 5 pm
Tuesday	8 am – 6 pm	9 am – 5 pm
Wednesday	8 am – 6 pm	9 am – 5 pm
Thursday	8 am – 6 pm	9 am – 5 pm
Friday	8 am – 5 pm	11 am – 4 pm

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, visit our website, call 210-784-1331 or visit Madla 120 between the hours of 8:00 AM and 5:00 PM.

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. Crisis support is available 24/7/365 by calling the SCC at 210-784-1331 or through the TELUS student support App.

The TELUS Student Support App provides a variety of mental health resources including 24/7/365 support for in-the-moment distress, crisis support, 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 system. 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 on emergency response may be found at: Emergency

Operations Plan and the Emergency Action Plan. 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 prior to 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.

Jaguar Writing, Language, and Digital Composing Center (WLDCC)

The WLDCC provides support to graduate and undergraduate students in all three colleges as well as faculty and staff. Writing 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. The WLDCC offers face-to-face, synchronous online, and asynchronous digital appointments. Students can schedule appointments with the WLDCC in JagWire under the Student Services tab. Click on “Writing, Language, and Digital Composing Center” to make your appointment. Students wanting to work in real time with a tutor can schedule an “Online Appointment.” Students wishing to receive asynchronous, written feedback from a tutor can schedule an “eTutoring” appointment. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website. The WLDCC can also be reached by emailing wldcc@tamusa.edu.

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 report for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to direct you to available resources. A food pantry is available on campus; click here for hours and contact information.

Military Affairs

Veterans and active-duty military personnel are welcomed and encouraged to visit the Office of Military Affairs for any question 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 or (210) 784-1397.

Religious Observances

Texas A&M University-San Antonio recognizes the wide variety of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or course work 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.

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 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, 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 accommodations to pregnant students as would be provided to a student with a temporary medical condition that are 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; 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 if students meet this criteria: (1) must be enrolled in classes at Texas A&M-San Antonio in the current semester, (2) must be Pell eligible or a single parent, (3) child(ren) must be aged 3 to 12-years-old, and (4) child(ren) must be enrolled in Pre-K-3 through 6th grade. Hours of operation are Monday-Thursday 3:30pm-9:00pm. For more information, please contact Young Jaguars at youngjaguars@tamusa.edu or call (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, 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 student 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, 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 or visit the resources available in the OSRR website.

Important Fall 2026 Dates

Date	Event
August 20	Tuition & Fee Payments deadline
August 24	First day of class
September 7	Labor Day Holiday – No Classes / University Closed
September 9	Census Date – Students not paid in full or enrolled in a payment plan by 4:59 pm may be dropped for non-payment
October 5 – October 16	Midterm grading period
November 13	Last day to drop with an automatic "W"
November 25	Study Day – No classes
November 26 – November 28	Thanksgiving Holiday – No Classes / University Closed

Date	Event
November 30	Last day to drop a course or withdraw from the University
December 4	Last day of classes
December 5 – December 11	Final exams
December 15	Commencement

The complete academic calendar is available online.

No Use of Generative AI Permitted

BIOL 2116 assumes that all work submitted by students will be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any portion of an assignment for them, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.