



BIOL 2410 Prin of Biology: Genetics section name section credit hours Credits
Syllabus

Course Information

Meeting times and location: section meeting_times section location

Catalog description: This course introduces the fundamental principles of heredity? DNA structure and replication? the processes of transcription, translation, and regulation of gene expression? and structural, functional, and comparative genomics. The course covers the application of major genetic concepts, principles, and techniques to understand and solve biological questions.

Prerequisites: BIOL-2110/2110L(BIOL-121)

Terms offered: Fall Only

Section-specific Course Description:

Course Level Objectives

Biol 2410 (Lecture)

Upon successful completion of the course, the student will be able to...

1. Students will be able to understand rules governing the segregation of genes carried on the same or different chromosomes.
2. Students will be able to explain and analyze human pedigrees.
3. Students will be able to describe the structure of DNA and how its information is transmitted to protein synthesis.
4. Students will be able to interpret scientific data, formulate a scientific hypothesis, and propose an experiment to test a scientific hypothesis.

5. Students will be able to describe molecular mechanisms governing why and how gene expression is regulated
6. Students will understand how deregulated gene expression contributes to human congenital disease and cancer.
7. Students will be able to understand how high throughput experiments are carried out and analyzed.
8. Students will be able to explain key principles of genomics to understand the content, organization, and function of genetic information contained in whole genomes.
9. Students will be able to apply genetic and physical mapping techniques to the understanding of structural genomics.
10. Students will be able to use comparative genomics to understand how genomes evolve in (i) genome size, (ii) gene content, (iii) gene functionality, (iv) nucleotide base content, (v) protein diversity, and/or (vi) transposable element proliferation.
11. Students will consider ethical issues related to genomics.

Biol 2410L (Lab)

Upon successful completion of the course, the student will be able to...

1. Be able to conduct library based research to produce an annotated bibliography or research paper that demonstrates the ability to distill and synthesize the primary literature.
2. Be able to verbally present a synthesis and interpretation of a published paper from the primary literature.
3. Be able to demonstrate critical thinking skills by interpreting scientific data, formulating a scientific hypothesis, and proposing an experiment to test a scientific hypothesis.
4. Be able to solve genetics problems involving single gene, X-linked, and non-Mendelian inheritance patterns.
5. Be able to conduct Chi-Square statistical analysis on genetics data.
6. Be able to describe the processes of DNA replication, transcription and translation.
7. Be able to compare and contrast the processes of gene regulation in prokaryotes versus eukaryotes.

8. Be able to understand how high throughput experiments are carried out and analyzed.
9. Be able to apply understanding of recombinant DNA techniques and RNA sequencing analysis in the biomedical sciences, biotechnology and/or bioengineering.
10. Be able to describe applications of structural, functional or comparative genomics in the biomedical sciences, biotechnology and/or bioengineering.

Required Texts and/or Materials

Genetics, A Conceptual Approach

1-319-05096-4
Benjamin Pierce
W. H. Freeman
Sixth

Required Technology and Software

- Canvas
- Chrome, Safari, or Firefox

Technical Support

Technical support is available through the San Juan College Help Desk 24/7/365. The help desk can be reached at 505-566-3266 or by creating a ticket at [San Juan College Help Desk](#).

For tickets and password reset: [San Juan College Help Desk](#)

For Canvas support information: [Canvas Support](#)

Accessibility/Privacy Policies for all Technology Tools Used

Scroll to the middle of the linked page to view

[Accessibility/Privacy Policies for all Technology Tools Used](#)

Course Requirements

Reading Assignments: The reading assignments for this course consist of chapter readings from Pierce and class and lab handouts. The student is expected to have read the chapter prior to class, and should be prepared to answer questions and discuss the readings in lecture.

Lecture Requirements

The lecture portion of this course will account for 75% of the final grade. The 75% will include chapter exams, the final exam, and weekly homework sets.

Chapter Exams (100 points): An exam will be given every three to four chapters. The exams will consist of detailed essay questions and genetics problems. Chapter exams may not be made up without prior approval from the instructor.

Final Exam (100 points): The final exam will be similar to a chapter exam and will include the final chapters covered in lecture. The final exam will NOT be cumulative/comprehensive.

Homework Sets (10 points each): There will be weekly homework sets throughout the semester. Each set will be handed out the first lecture of the week, and will cover material that will be covered that week. The homework sets will be due the first lecture of the following week. The homework sets will consist of genetics problems and essay style questions. Each problem and question should be answered thoroughly and completely for full credit.

Lab Requirements

The lab portion of this course will account for 25% of the final grade. The 25% will include lab reports, scientific article discussion, and check-out points.

Lab Reports (20 points each): The lab report will be a write-up of the experiment(s) performed by the class. Details of the format of the lab reports will be given in lab at a later date.

Scientific Journal Article Questions and Discussion (Journal Set 20 points each): At three points in the semester, students will be asked to read a scientific article and participate in a 30-40 minute discussion of the article. To facilitate the discussion, the students will be asked to complete a worksheet with questions relating to the article. Answering the questions on the worksheet will be worth 10 points, participating in the in class discussion will be worth 10 points, for a total of 20 points. Participation points will NOT be able to be made up without prior permission from the instructor.

Check-out: In the past, students have had a tendency to rush out of the lab and leave their stations a mess. This lab is shared with many other classes. In order to make sure that the lab is kept clean for other classes, students will be required to check out with the instructor at the end of the lab. This will also serve as a check on attendance.

PLEASE NOTE: You will be expected to wear the appropriate Personal Protective Equipment (PPE) and wear appropriate dress as outlined in the Safety Rules and Procedures Agreement while in lab. Failure to follow the dress guidelines will result in a zero for check out points for the day. Failure to wear the appropriate PPE will result in your dismissal from class until you go get your PPE.

COVID Safe Practices for Being on Campus

COVID Safe Practices for Being on Campus

What to do if you have COVID-19 symptoms, are exposed or test positive:

- Do NOT come to campus
- Contact your Instructor
- Complete the COVID Intake Form
 - link: [SJC COVID-19 Intake Form on SJC Work Order System \(samanage.com\)](https://www.sanjuancollege.edu/coronavirus/) you will need to scroll back to the top of the screen and click the Request Item button to submit the form
- The Pandemic Coordinator will review the intake form and contact you with further guidance including when you can return to campus

Additional SJC COVID-19 information and resources and be found at the website below:

<https://www.sanjuancollege.edu/coronavirus/>

Student Support

Student Services and Support

At San Juan College, we support your academic success and overall health. We know that students often experience a range of stressors that can impact learning and well-being. If you, or someone you know is experiencing mental health concerns, or could benefit from effective academic strategies, there are free and confidential resources available to enrolled students through the Counseling Center. To learn more, visit the counseling center website <https://www.sanjuancollege.edu/student-services/advising-and-counseling-center/counseling-center/> or call 505-566-3404.

The Student Support webpage provides information on counseling, tutoring, technical support, and many other support services available to San Juan College students.

[Student Support](#)

Academic Support

Academic Support webpage provides information on academic advising, the library, Testing Center, and the honors program.

[Academic Support](#)

Participation and Attendance Policy

I do not take roll in class, and attendance is not mandatory. However, if you miss a lab, you will not be eligible for check-out and will not be able to turn in a lab report for that particular lab. You will also be responsible for the material covered on that particular day in lecture and/or lab and should make arrangements to get notes from a classmate. If you know that you will not be able to attend a particular class or have an emergency come up, please let me know as soon as you can. If I know about an absence in advance we can make arrangements.

San Juan College has adopted a class participation policy (described in more detail below). This is how I will be implementing the SJC participation policy: Lab check-out serves as a check on attendance. If a student is listed as absent in check-out for two labs in a row, I will consider the student to be not participating and will mark them as having stopped attending. This will NOT drop you from the course, but it may impact your financial aid disbursement. It is extremely important that you let me know (either by phone or e-mail) that you were not able to make it to lab, and let me know if you will be continuing with the class. If you let me know, I will be able to work with you to get caught up with assignments, and I will remove the notation of non-participation.

Inclement Weather Information

Students will receive notification of late-starts and class cancellations due to inclement weather via the SUNS Alert app. Classes scheduled to meet face-to-face will not meet, but if practical will meet remotely via Zoom. Online classes will be held as usual. Hybrid classes and classes with Zoom options will meet on Zoom.

Other Classroom Policies and Expectations

Academic Honesty v. Plagiarism: Plagiarism—using another's words or representing someone else's work as your own, and/or failing to document your sources—is both academically dishonest and illegal. This includes copying another student's work as well as copying words out of the textbook. It is also academically dishonest to use previously submitted work for a current assignment. San Juan College expects all students to adhere to the Academic Honesty Rules as posted on the college website (<http://www.sanjuancollege.edu/AcademicHonesty>). Failure to follow these rules will result in

an automatic zero on the assignment. It may also result in a failing course grade and possible further disciplinary action.

Electronics in the Classroom: In order for students to do their best in the course, it is important to maintain an environment that is free of distractions. Please be considerate and turn off or put cell phones on vibrate, and refrain from texting or browsing during class. In addition, use of cell phones or MP3 players will not be permitted during exams. If your use of electronics during class is disruptive, you may be asked to leave the classroom.

E-mailed Assignments: I am willing to take assignments over e-mail, however, it is still your responsibility to make sure I actually received the assignment. I will usually send a confirmation e-mail when I get an assignment, but please double check in person. If you do not receive a confirmation e-mail, assume I have not received the assignment and make sure it gets to me.

Extra Credit: All extra credit points will be added directly to the student lecture total but NOT to the total possible points. Earned extra credit will be added regardless of performance in other portions of the course.

Late Assignments: I will accept late homework assignments and lab reports. After 5PM of the due date, I will deduct 20% of the total points possible from the assignment in addition to any points missed on the assignment.

Lecture Notes: Power Point files of lectures are available on Canvas

Make-up Exams: Exams will NOT be able to be made up without prior approval from the instructor. If you know you will have to miss an exam, you can arrange to take the exam at another time prior to my handing back the graded exams (approximately 1 week after the exam). Make up exams will be taken in the SJC Testing Center.

Canvas Participation and Expectations

Course materials will be available on canvas. Students should check their Canvas inbox daily.

Instructor Response Time

The best way to contact me during the school week is by e-mail or Canvas message. I will reply within 24 hours. I don't generally check my school e-mail or Canvas on the weekend.

On the weekend or school breaks, the best way to contact me is to call or text to my cell phone. If you text, please tell me your name and which class you are in. If you don't reach me directly, leave a message and I will try to get back to you within 24 hours.

Course Time Commitment

Doing well in an online course takes a lot of time and dedication. Because there is no set time to be in class, students need to be self-motivated to keep up with the coursework. You should plan on spending a minimum of 10 hours per week on the course. To do well you should plan on spending 15-20 hours a week reviewing the material, doing labs and assignments and studying. Students also have to be a little pushy when it comes to making sure they understand the material, and not be afraid to ask questions of the instructor. I will try to make it as easy as possible, but it is up to the student to make it happen.

Grading

Final grades are calculated based on

Grade Scale: The grading scale will be as follows:

90%-100% A

80%-89.9% B

70%-79.9% C

60%-69.9% D

59.9% and below F

Students who stop attending class at any time during the semester, but fail to withdraw from the course, will receive an "X" grade. This grade will affect your GPA in the same way as a grade of "F".

Point Distribution: Prin Biol: Genetics is offered at four (4) credits total, three (3) credits of lecture (Biol 2410) and one (1) credit of lab (Biol 2410L). You will receive a grade for both lecture and lab, but the grade will be the same overall grade you achieve for both. Seventy-five percent (75%) of the overall grade is from lecture and twenty-five percent (25%) from lab. For example, if you get an 86% (B) overall using the following formula, both Biol 2410 and Biol 2410L will have a B on your transcript.

Final grade calculation formula:

$$\left(\frac{\text{Student Lecture Total}}{\text{Total Lecture Points}} \times 75 \right) + \left(\frac{\text{Student Lab Total}}{\text{Total Lab Points}} \times 25 \right) = \text{Final Grade}$$

the following...

Key Dates to Remember

[Full Academic Calendar](#)

College Policies

The following information also applies to your work in this class. If you have special needs for campus emergency situations, please inform me immediately.

1. Academic Accommodations - American with Disabilities Act (ADA)

If you believe you need academic accommodations due to physical or learning disabilities, you are encouraged to contact Disability Services as soon as possible. The coordinator can work with you in verifying your disabilities and developing accommodation strategies. Please go to the [Disability Services website](#), click the button for "Request for Services" and complete all the steps.

You can also contact the college's disability coordinator in the Advising/Counseling Center at 566-3271 or disabilityservices@sanjuancollege.edu. More information is available on the website listed above.

2. The Family Educational Rights and Privacy Act (FERPA)

Refer to the catalog for information regarding FERPA:

<https://catalog.sanjuancollege.edu/content.php?catoid=12&navoid=581>

3. Academic Honesty Rules

San Juan College expects all students to adhere to the [Academic Honesty Rules](#) as posted online. These are the official guidelines for all classes at San Juan College.

4. Student Conduct Statement

College is preparation for professional opportunities, and professional conduct is expected in courses, including online classes, as well as any written communications, and interactions with members of the college community. As part of our learning community, students are expected to interact and communicate in a mature, respectful, thoughtful, and supportive manner. Students who demonstrate disrespectful, hostile, belittling, bullying or other disruptive behavior

will be subject to potential consequences and possible dismissal from the college. The college will take appropriate action when students demonstrate threatening behavior (to others or self). Students should refer to the Code of Conduct in the Student Handbook for additional information.

5. Student Safety

Keeping students safe is a priority, and part of that is ensuring that we have the ability to communicate emergency messages to you. SJC SunsAlert is San Juan College's Emergency Notification System that will provide you with real-time information about campus closures, extreme weather, and other emergencies through your San Juan College email, text alerts, and phone calls. Should an emergency occur prior to activating your SJC SunsAlert, you will only receive messages through your San Juan College email. To receive a phone call and text alert, you must activate your SJC SunsAlert account and register your phone number. To activate your SJC SunsAlert account, you will need to download the Everbridge App in the App Store or Google Play. Once the app is downloaded follow these steps:

- Open the app
- Click on "Find an organization or subscription" button
- In the search box, either type in San Juan College or 87402
- Click on "SJC SunsAlert"
- Sign on using your SJC email and password
- Once you sign in, you will want to click on "Manage My Profile"
- Click on "edit"
- Include your preferred communication methods.
- Enter your cell phone number in the personal text msg field to ensure you receive text messages.
- Confirm all information (phone number & email) is correct and up to date.
- If you need help with the app, please call John Myers at 505-566-4224 or Kenny Hibner at 505-566-3050.

In the event of an emergency, an SJC SunsAlert message will be sent, and depending on the situation, you will be instructed to do one of the following:

- Evacuate the building
- Shelter in place (Campus doors are locked, and operations continue as normal. During this situation, no one other than law enforcement is allowed in or out of the campus.)
- Lockdown (Campus doors are locked. All operations cease, and you should take cover in your immediate area. No one other than law enforcement is allowed in or out of the campus.)

The Department of Public Safety (DPS) is available 24 hours per day. In an emergency, you can reach DPS staff by calling (505) 566-4444.

6. Non-Discrimination, Sexual Harassment, and Retaliation.

San Juan College does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender identity, national origin, disability, age, genetic, veteran's status, or on the basis of any other category protected under federal, state and local laws. If you have experienced sexual harassment, sexual assault, or any other form of protected class discrimination, we encourage you to make a report. If you report to a faculty member, she/he/they are obligated by policy to share knowledge, notice, and/or reports of harassment, discrimination, and/or retaliation with the Title IX Coordinator. These disclosures include but are not limited to reports of sexual assault, dating/domestic violence, and stalking. You may also make a confidential report to a SJC Counselor. Please refer to San Juan College's [Title IX](#) site for further details.

San Juan College's Title IX Coordinator is Stacey Allen, Assistant Director of Human Resources/Equity, Diversity, and Inclusion Officer. The office is located at the Educational Services Center Building, 2nd Floor, Human Resources, Room 4243 at (505) 566-3515 or allens@sanjuancollege.edu.

7. Drop for Non-Attendance and/or Non-Participation

Class Attendance and Participation Expectation:

Face-to-Face -- Students are expected to attend and participate in class regularly. Any student missing more than 10% of consecutive class time, (For example, in a regular 15-week class that meets twice a week, this equates to the student missing 3 consecutive classes) without consultation with the instructor may be considered as having abandoned the course.

On-line -- Students are expected to participate regularly and submit all course assignments, based on the course guide definition. A student who does not submit any assignments during a consecutive 10% of the course (1.5 weeks of a 15-week semester) without consulting the instructor, may be considered as having abandoned the course. Logging in does not meet the attendance standard.

Competency-Based Education Classes -- Students are expected to have regular and substantive interactions with their instructor and to actively work on course content. A student who has not submitted coursework, nor had substantive interactions with the instructor over a consecutive 10% of the term, without the instructor's prior approval, will be considered to have abandoned the competency progression. Last date of attendance will be recorded as the last date that coursework was submitted or that the student met with the instructor. For on-line learners, logging in does not meet the attendance standard.

Failure to Meet Class Participation Expectation:

Students who fail to meet participation expectations will have their last date of attendance recorded. This date will be used to recalculate any financial aid received/veteran's benefits received, and the student may be required to repay the institution/government. If the student does not drop the course, an 'X' grade will be recorded. An 'X' grade impacts the grade point average the same as an 'F'.

8. Grading Policies

Incomplete: Incomplete Grade Assignment ([Incomplete Grades Information](#))

The grade of I (Incomplete) is given for passing work that could not be completed during the semester because of circumstances beyond the student's control. Ordinarily, the assignment of an I is given by the course instructor at the time final grades are due.

In no case is an I grade to be used to avoid assignment of D or F grades for marginal or failing work or to require a student to enroll in the class the next semester because work was not completed on time. Circumstances warranting the issuance of an I grade must be beyond the student's control and must be documented on the appropriate form prior to approval.

I grades can be removed only during the subsequent 16 weeks from the end of term, or within the time limit set by the instructor. Removal of an I is accomplished by completing the work in a manner acceptable to the instructor. Re-enrollment in the course under the repeat option does not remove the prior grade of I. Students should not re-enroll for the course. An I not made up within 16 weeks or within the time limit set by the instructor will change to an F grade thereafter and cannot be changed by work completion.

9. Grade Appeals

The policy for grade appeals is in the Academic Catalog ([Grade Appeal Policy](#)).

Student Handbook

The Student Handbook provides information on Student support, student organizations, and San Juan College policies.

[Student Handbook](#)