San José State University
Department of Biological Sciences
Biol 115 Genetics, Summer, 2011

Instructor:	Rachael French, Ph.D.
Office Location:	Duncan Hall 438
Telephone:	408-924-4894 (please do not leave messages, as they are frequently hard to understand and thus rarely returned)
Email:	rachael.french@sjsu.edu **(preferred method of communication)**
Office Hours:	Mondays 1 to 3 p.m. and Wednesdays 3 to 5 p.m.
Class Days/Time:	Lecture: Monday-Thursday from 10:00 a.m. to noon Discussion: Tuesdays and Thursdays from 2-3:15 p.m.
Classroom:	Lecture and discussion will both be held in Science 258.
Prerequisites:	**The following must be turned in by noon on Tuesday, August 5 to Dr. French. Students wishing to add the course must also turn in these documents. Incomplete forms will result in the student being dropped from the course. Electronic copies e-mailed to Dr. French before the deadline are acceptable.** **SJSU Students:** Unofficial transcripts with your name and ID number (not hand-written) showing completion of Bio 3 or 1B with grades of C or higher, Chem 1A, and Chem 1B. **Transfer Students:** Equivalency Form signed by Stephanie Trewhitt (408-924-5096, DH-237, stephanie.trewhitt@sjsu.edu) showing equivalent prerequisites to those described for SJSU students at another institution.

Desire2Learn

Copies of course materials such as the syllabus, lecture materials, and problem sets can be found on the Bio 115 Desire2Learn (D2L). You are responsible for logging on each week to complete the assignments online and to download any course materials. You can access D2L at https://sjsu.desire2learn.com/. If you have used D2L before, you can use the same username and password. If this is your first time using D2L, your username and password are available in your mySJSU page under the "D2L Login" tab. If you have any problems logging in, contact the help desk at (408)924-2377 or visit them on the first floor of Clark Hall. DO NOT CONTACT ME – I do not have access to your account. If you do not have a computer, see "Student Technology Resources" below.

Information will be presented in class that is not available on D2L. Students are not required to come to class, however they are responsible for information given during lectures.

Course Description

Biology 115 is a challenging upper division class that is the prerequisite for many other upper division classes. It will cover the principles and methods of microbial, plant, animal and human genetics. The broad areas of Mendelian (classical) genetics, cytogenetics, molecular genetics, recombinant DNA, genomics, mutagenesis and population genetics will be included in the course.

Course Goals and Student Learning Objectives

Students will learn to perform genetic analysis by solving quantitative and qualitative problems. Students should learn the basic vocabulary of genetics and become familiar with the model organisms utilized in contemporary genetics research. Students should also gain enough basic knowledge of genetics to allow them to take advanced courses in genetics and molecular biology. In addition, they should acquire critical thinking skills and the ability to interpret societal issues involving genetics. Students will also strengthen good study habits, which will be necessary for future upper division classes and graduate education.

Required Texts/Readings

Textbook

Pierce, BA, Genetics: A Conceptual Approach. 4/e. WH Freeman & Co. 2012.
It also acceptable to use the third edition of the Pierce text instead of the fourth edition, however you will be responsible for determining the corresponding reading assignments, as the book has been partially reorganized.

Other Readings

Additional reading materials will be provided on D2L.

Other Materials

- For all exams bring #2 pencil and scantron forms 886-E.

Lectures

Course lectures will include material the instructor feels is most important in a general genetics course. **Do not ask the instructor what will be on the exam!** If information is covered in class, if it is on a problem set, or if it is mentioned in a discussion section, it could be on an exam. The purpose of an exam is to probe all of the learning done in a week of classes in 1 hour. It is by nature a sampling of what you should know. By telling

students what is on the exam, a professor limits your studying to that small sample of knowledge that can be fit into one hour, and severely limits your learning.

Lectures will not cover chapters 2 (Chromosomes and cellular reproduction), 10 (DNA structure), 13 (Transcription), 14 (RNA molecules and RNA processing) and 15 (The genetic code and translation) due to lack of time. This material was covered in Biol 1A/ 1B and/or Biol 1-3 and is review. **Students are expected to know or learn this material**.

Discussion Sections

The discussion sections are used for discussion and to solve genetics problems, a very important part of this course. Some of the problems may be new ones, not from the text, and others will be selected from the text. We will also do additional activities that are meant to strengthen or add to your learning. Material from these activities will also be on exams.

Exams

Because of the condensed nature of summer courses, the exam structure will be somewhat unusual. There will be an exam every Monday, for one hour in the first half of the class period. The exams will not be comprehensive, and there will be no final exam.

Course Structure

The structure of this class has been designed around strengthening good study habits. Bad study habits have been identified as a source of failure of otherwise intelligent and talented students in upper division classes at SJSU. Bio 115 is the first upper division class for many biology students, and therefore an excellent opportunity to instill good habits that will help students through this class, upper division classes, and future graduate courses.

Good study habits include keeping up with the reading and solving problems by doing a little each day, rather than waiting and cramming before the exam. Cramming alone may have gotten students through introductory courses, but most students will not retain the information for future courses. In addition, in a summer course with weekly exams, cramming is a particularly ineffective preparation strategy. Long-term retention increases with repeated exposure to information and active participation in learning. To address these points, I have designed the class in the following general structure which should expose students to the material five times before each exam:

1. Students **read book chapter before lecture**. Students should think about material and write down any questions.
2. Active participation in **lectures**. Students should engage in class discussion and ask any questions they have.

3. **Weekly problem sets** will allow the students to work through problems and probe their understanding of important concepts. The problem sets will NOT be graded; however, success in the course will depend on the ability to solve the assigned problems. It is your responsibility to work the problems and ask questions during discussion sections.
4. There will be **discussion sections** twice weekly. Students should bring questions. We will work through problems and also introduce new material.
5. Students should **study** before each exam.

Classroom Protocol

Students should be punctual, and if you must be late, enter silently from the back entrance, to avoid disturbing the other students. Students should at all times be respectful of other students and the professor. Those who are not may be asked to leave the class. Participation in class is strongly encouraged and will add to your learning experience. Participation will help you and other students develop not only a deeper understanding of the material, but an ability to articulate your thoughts in a scientific context.

Attendance in lectures and discussions is not mandatory, but past experience suggests that it is unlikely that students who miss more than three classes (including lectures and discussion sections) will succeed in and pass the class. I strongly recommend that students who will need to miss more than three classes drop the course and take it another semester when they can attend all of the classes.

Electronic devices can be distracting to other students who are sacrificing time, energy and money to accomplish their educational goals. Therefore, a very strict policy will be enforced. All cell phones, PDAs, and other electronic devices must be put on silent (not vibrate) and placed inside a purse or backpack for the duration of the class. If the device makes any noise or if a student uses or views it during class (even below the desk), it will be confiscated and the student may be asked to leave the class. The student will still be responsible for the information provided in class that day. Students are allowed to use laptop and tablet computers in class; however, similar rules apply if the computer makes any noise or if they are used for purposes other than viewing the lecture presentation or taking notes.

Exam Protocol

Students must sit in a seat for quizzes and exams and must put all materials except a pencil and scantron in a zipped bag or backpack underneath their desk. Earpieces are not allowed, and neither are hats or hoods that could conceal earpieces. If any other materials or earpieces are found, you will receive a 0 on the exam and be reported for academic dishonesty, for which you could be expelled. Students must remain quiet from the time the exam is displayed or passed out until ALL quizzes or exams are collected and the professor tells you that you are allowed to speak. If you speak before this time, it

will be assumed that you are cheating and you will receive a 0 on the assignment and be reported for academic dishonesty. (The only exception to this policy is questions asked directly to the professor.) If you are late, you will not be granted extra time at the end of the exam, so be prompt.

Email Policy

Emails will be returned by the professor during office hours if there is time after speaking with students who appear in person.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information on add/drops are available at http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-324.html . Information about late drop is available at http://www.sjsu.edu/sac/advising/latedrops/policy/ **.** Students should be aware of the current deadlines and penalties for adding and dropping classes.

Assignments and Grading Policy

Final grades will be entirely based on your scores on Exams 1-5. Each exam will be worth 20% of your final grade. **THERE ARE NO MAKEUP EXAMS! If you miss an exam for any reason other than an official medical excuse, you will get 0 points for that exam. You may retake ONE exam in the event of an official medical excuse; further missed exams, for ANY reason, will receive a 0.** In addition, exams will not be given early or outside of normal class time unless the student has an official accommodation.

Final grades will be scaled only if the average class grade is below a C, but this cannot be determined until all assignments and exams are completed including the final exam. However a student with a final course average of 90% or higher will receive no worse than a course grade of A-, a student with a final course average of 80-89% will receive no worse than a B-, a student with a final course average of 70-79% will receive no worse than a C-, a students with a final course average of 60-69% will receive no worse than a D-, and student with 0-59% will receive no worse than an F.

University Policies

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University's Academic Integrity policy, located at http://www.sjsu.edu/senate/S07-2.htm, requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student

Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sa.sjsu.edu/judicial_affairs/index.html.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Policy S07-2 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Disability Resource Center (DRC) at http://www.drc.sjsu.edu/ to establish a record of their disability.

Student Technology Resources

Computer labs for student use are available in the Academic Success Center located on the 1st floor of Clark Hall and on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library.
A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include digital and VHS camcorders, VHS and Beta video players, 16 mm, slide, overhead, DVD, CD, and audiotape players, sound systems, wireless microphones, projection screens and monitors.

Learning Assistance Resource Center

The Learning Assistance Resource Center (LARC) is located in Room 600 in the Student Services Center. It is designed to assist students in the development of their full academic potential and to motivate them to become self-directed learners. The center provides support services, such as skills assessment, individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development. The LARC website is located at http:/www.sjsu.edu/larc/.

SJSU Writing Center

The SJSU Writing Center is located in Room 126 in Clark Hall. It is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU colleges. Our writing specialists have met a rigorous GPA requirement,

and they are well trained to assist all students at all levels within all disciplines to become better writers. You are strongly encouraged to take advantage of this resource, which will aid you in short answer questions in this course, and in major class assignments in many upper division classes. The Writing Center website is located at http://www.sjsu.edu/writingcenter/about/staff/.

Peer Mentor Center

The Peer Mentor Center is located on the 1st floor of Clark Hall in the Academic Success Center. The Peer Mentor Center is staffed with Peer Mentors who excel in helping students manage university life, tackling problems that range from academic challenges to interpersonal struggles. On the road to graduation, Peer Mentors are navigators, offering "roadside assistance" to peers who feel a bit lost or simply need help mapping out the locations of campus resources. Peer Mentor services are free and available on a drop –in basis, no reservation required. The Peer Mentor Center website is located at http://www.sjsu.edu/muse/peermentor/ .

Biol 115/Genetics Summer 2011 Course Schedule

- This schedule is subject to change. Any changes will be announced in class.
- **NOTE: Exam 5 will be held on Monday, August 8!**

Week	Date/Day	Topics, Assignments, Deadlines	Pierce 4th Ed. Chapter
1	July 5 T	Course Introduction Review of Fundamental Genetic Principles Discussion 1	1
	6 W	Mendelian Genetics	3
	7 R	Sex Determination Extensions to Mendelian Genetics Discussion 2	4, 5
2	11 M	Exam 1 (Chapters 1-4) Extensions to Mendelian Genetics (con't)	5
	12 T	Extensions to Mendelian Genetics (con't) Genetic Model Organisms and Pedigrees Discussion 3	5, 6
	13 W	Linkage and Gene Mapping	7
	14 Th	Bacterial and viral genetics Discussion 4	8
3	18 M	Exam 2 (Chapters 5-8) Chromosomal aberrations	9
	19 T	Aneuploidy Genome Organization and Transposable Elements Discussion 5	9, 11
	20 W	Transposable Elements, con't DNA Replication	11, 12
	21 Th	DNA Replication (con't) and recombination Gene regulation in bacteria Discussion 6	12, 16
4	25 M	Exam 3 (Chapters 9, 11-12) Gene regulation in bacteria, con't	16
	26 T	Gene regulation in eukaryotes Mutation Discussion 7	17, 18
	27 W	Mutation (con't) and DNA Repair Recombinant DNA	18, 19
	28 Th	Recombinant DNA (con't) Discussion 8	19

Week	Date/Day	Topics, Assignments, Deadlines	Pierce 4th Ed. Chapter
5	Aug 1 M	Exam 4 (Chapters 16-19) Genomics	20
	2 T	Proteomics Developmental Genetics Discussion 9	20, 22
	3 W	Population Genetics	25
	4 Th	Evolutionary Genetics Discussion 10	26
	8 M	Exam 5 (Chapters 20, 22, 25-26)	