
Biology 120: Principles of Biology Lecture and Lab

Grossmont College, Fall 2018, Class Section 1116

Welcome to Biology 120! Congratulate yourself for enrolling in this course. You have overcome many challenges to get here and you are a valued co-participant in our class and we will work together until you feel that we are 100% co-responsible for knowing and embracing the syllabus contents. Grossmont College has many resources to support your academic and career goals. I look forward to advocating for your college success.

CLASS TIMES AND LOCATIONS

Classroom Setting:

Tuesday and Thursday 12:30 pm - 1:45 pm. **Room 36-345B**

Laboratory Setting:

Thursday 2:00 pm – 5:00 pm. **Room 30-128**

INSTRUCTOR

Frank Santana

Email: Frank.Santana@gcccd.edu

REQUIRED TEXTS AND MATERIALS

- 1) Biology 120 **Laboratory Manual**. Available at the campus bookstore.
- 2) **Textbook**: Biology Concepts & Connections 9th Edition (8th and 7th editions are very similar and can be purchased or rented from online retailers). In addition, the publisher sells an e-text version with associated study videos and resources.
- 3) **SimUText** Lab Activity Fees. The instructor will provide the web address for the purchase (Cost is \$12) of this workbook. Purchase of this workbook is required to participate and receive credit for the lab activity. This is a required cost for the course and you will
- 4) DataLink **Test Form #27220** for each Exam. Forms are available in the Bookstore.

Other assigned reading material may be distributed by the instructor either as hard-copy or electronically.

Course Description

This course covers the major principles of biology. Course content includes cell structure, metabolism, genetics, evolution, systematics and ecology. The laboratory component of this course will be a hands-on laboratory experience that uses a lecture/laboratory instruction format designed to reinforce and augment the student's understanding of the principles of biology addressed in the lecture portion of the course.

How to Succeed in this course

Together with collaboration between yourself, peers, and your instructor you can succeed in this fun but challenging course. The scope of biology is vast. This course provides a broad introduction to different study areas in biology and its fundamental concepts. The student will be presented with information that will serve as a basis for further learning in biology. This will include the physical and chemical laws governing life functions, the way energy is acquired and used by living things, the origin and diversity of life, the structures composing living organisms and the functions that they perform, and how living things interact with each other and the environment. The student will also learn how scientific studies are conducted by participating in laboratory exercises. This course is equivalent to any introductory course in biology offered at California State Colleges and Universities. Many students have little or no background in biology or science when enrolling in this course, thus Biology 120 is designed for the beginning college student. However, keep in mind that our biology courses are taught at the University level, as Biology 120 is transferable. Biology courses can be great fun, but are challenging and time consuming. You have demonstrated your ability to succeed in many aspects of life and you can succeed in this course as well. Throughout this course I will encourage and support you as you apply and refine your critical thinking, reading, writing and time-management skills.

My Teaching Philosophy and the Keys to Success in this Course

It is my role as the instructor to guide you through this course by highlighting important concepts and regularly challenging your understanding of the material. I will help you assess your progress in the course not only through the recollection of facts and definitions, but through application of the material to a variety of contexts and situations.

Course Objectives

Successful students should be able to:

- List and describe the steps comprising the scientific method and apply the scientific method to understanding experimental design and the analysis of experimental data
- Differentiate between the primary scientific literature and generic presentations of scientific knowledge and be able use the primary literature in conjunction with understanding selected biological principles
- Define and explain the basic mechanisms of cellular reproduction, the molecular biology of inheritance, and the fundamental patterns of genetic inheritance.
- Connect the process of evolution by natural selection to the processes of cellular and molecular reproduction.

- List and describe the major steps in evolution by natural selection, explain how these steps account for the observed diversity of life on earth.
- Describe and explain the general characteristics of life
- List the criteria that define the major domains & kingdoms of life on earth.
- Explain the basis of evolution-based classification of life on earth (systematics)
- Differentiate between homologous and analogous structures and provide at least one example of each
- Differentiate the structural differences between typical prokaryotic and eukaryotic cells as well as between typical plant and animal cells.
- Explain and provide examples of the concept of homeostasis, the self-regulation that maintains the optimal internal conditions for survival in changing environmental conditions.
- Explain the interrelationships within living systems as well as between living systems and their physical, chemical, and energy environments.
- Analyze, explain and apply the data collected from laboratory experiments performed in class
- Prepare specimens for examination using a compound microscope
- Use self-prepared and prepared materials for examination and analysis using laboratory equipment
- Read and analyze college-level materials that elaborate and expand on the understanding of biological topics.

Tips to set yourself up for success:

- Read the book chapter or other relevant material **before** it is discussed in class.
- Check Canvas everyday to be up-to-date with class announcements, materials, and homework.
- Arrive in the classroom **before** the scheduled start time and remain for the entire session.
- Take notes throughout the class period to supplement and reinforce the reading material.
- Actively participate in class discussion activities, and collaborate with your classmates.
- Note any questions you have for the instructor.
- Review your notes for the day after each class and review related material in the textbook.
- Read the “Review” section at the end of each chapter in the textbook.
- *Constantly question whether you understand the material, and identify areas you need to work on.*
- Form study groups with your peers to review the material and quiz each other.

Following all items on this list does not guarantee you will get an “A” in this course, but will orient you toward success.

Warning!

The use of living organisms are essential to the teaching of this course. This includes, but is not limited to dissection. Your presence and participation is encouraged and is required for full credit in the class. Lack of participation may negatively impact your lab grade.

Canvas: Access Canvas for updates to the class schedule and to monitor your points throughout the semester. If you believe that the points for an assignment has been recorded incorrectly please contact your instructor. Canvas can be accessed at the url here:

<https://gcccd.instructure.com/login/canvas>

Attendance:

Missing more than 4 combined labs or lectures can result in being dropped from the course.

Attendance for the entire laboratory portion of the class is mandatory. If you leave lab early you will be counted as absent for that lab. To avoid loss of credit let me know before leaving. If you are late to a class please see me immediately after lab introduction to make sure that you are not marked absent.

Points available for the course:

Assignment	Points
Pre-Lab Assignments (15 @ 5 pts each)	75
Lab Activity Sheets (15 @ 10 pts each)	150
Homework Assignments	150
Exams (5 @ 100 points)	500
Group Research Presentation/Report	100
Classroom Participation (2pts @ 25 Days)	50
Total* (Total points may increase or decrease slightly)	1,025

Grading Scale:

Your grade is based upon the percentage of total points you accumulate during the semester

A ≥ 85.0% of the total possible points. An "A" is awarded for "Excellent" performance

B ≥ 75.0% of the total possible points. A "B" is awarded for "Good" performance

C ≥ 65.0% of the total possible points. A "C" is awarded for "Satisfactory" performance

D ≥ 55.0% of the total possible points. A "D" is awarded for "Passing, but less than satisfactory" performance

F < 55.0% of the total possible points. An "F" is "Failing".

There will be no make-up labs. A pre-lab assignment will be completed on Canvas each week.

Printed lab activity sheets will be provided by your professor and they will be reviewed and turned in at the end of each lab and will be graded according to completion, participation in the lab, and participation in group lab discussions. Student who leave the lab early will not be able to turn in their lab activity sheets and will receive a 0. Please note that the lab grade is not separate from the lecture section, **your final grade for the course will result from the combined points from lecture and lab.**

A **group research presentation** worth 100 points will be the final assignment for the course. In order to receive points for the presentation you must contribute to and participate in the final project. Each student will write their own original report for the project.

Participation and Professionalism

The lecture and laboratory environment is a collegial, collaborative, professional community. Student behavior toward their peers and instructors is expected to reflect as much. Students will earn 2 participation points for their active engagement during each classroom day other than exams and presentations. Participation will be measured using a unique card for each student that you must bring to every classroom session in order to receive credit.

Disruptive behavior:

While discussion is normal and encouraged in this class disruptive behavior will not be tolerated since it affects fellow students. **This includes using cell phones or personal computers for other purposes than participating during class.** Treat one another with respect and courtesy at all times. Failure to do so and you will be asked to leave the class with possible further suspension from the course depending on the severity of the breach.

Accommodations for Students with Disabilities:

Students with disabilities who may need accommodations in this class are encouraged to notify the instructor and contact **Accessibility Resource Center** early in the term so that reasonable accommodations may be implemented as soon as possible. Students may contact ARC in person in Building 60-120 or by phone at (619) 644-7112 (voice) or (619) 567-7712 (Video Phone).

Academic Integrity:

Cheating and plagiarism (using someone else's ideas writings, materials, or images without their acknowledgement or permission) can result in any one of a variety of sanctions. Such penalties may range from an adjusted grade on the particular exam, paper, project, or assignment (all of which may lead to a failing grade in the course) to, under certain conditions, suspension or expulsion from a class, program or the college. For further clarification and information on these issues, please consult with your instructor or contact the office of the Associate Dean of Student Affairs.

Lab Safety:

A safe lab requires the diligence of all students to ensure that everyone has a safe learning environment. Follow all lab safety procedures and instructions from the professor. If a lab situation seems unsafe or you observe unsafe practices being used in lab please notify your professor immediately! **NO FOOD OR DRINK IN THE LAB CLOSED-TOED SHOES ONLY**

Please clean up your areas before you leave. Replace all material on appropriate cart or counter, discard paper towels, cover slips and other disposable items, return glassware, etc. There is no cleaning service and your instructor or laboratory technicians are not here to clean up after you.

Due to safety concerns all lab doors are to remain locked when instructors are not present in lab room and in-between classes. Students are encouraged to use the **Science Learning Center at the north end of the building (30-162)** while waiting for classes to begin and instructors to arrive, as well as for any study purposes.

Note: This syllabus serves as a binding contract between student and instructor. By enrolling in this course you are agreeing to all terms of this syllabus.

CLASSROOM & READING SCHEDULE (Subject to Change):

Date	Textbook Chapter Reading	Topics
Aug 21	1	Course Overview/What is Biology & Science
Aug 23	1	What is Biology & Science
Aug 28	2	Chemistry
Aug 30	2	Chemistry
Sept 4	3	Biomolecules
Sept 6	3	Biomolecules
Sept 11	NONE	EXAM 1 (Blue Side of Exam Form)
Sept 13	4	Tour of the Cell
Sept 18	4	Tour of the Cell
Sept 20	8	Cell Cycle and Mitosis
Sept 25	5	Cell Functions & Processes
Sept 27	5	Cell Functions & Processes
Oct 2	NONE	EXAM 2 (Green Side of Exam Form)
Oct 4	6	Cellular Respiration & Fermentation
Oct 9	6,7	Cellular Respiration Contd., Photosynthesis
Oct 11	7	Photosynthesis
Oct 16	23 & 32	Circulation & Plant Transport
Oct 18	NONE	EXAM 3 (Blue Side of Exam Form)
Oct 23	N/A Assigned Readings	Introduction to Scientific Publications
Oct 25	N/A Assigned Readings	Introduction to Scientific Publications
Oct 30	9	Meiosis
Nov 1	10	Classical Genetics
Nov 6	11	Genetic Control
Nov 8	NONE	EXAM 4 (Blue Side of Exam Form)
Nov 13	13	Population Genetics
Nov 15	14	Origin of Species
Nov 19-23	THANKSGIVING	HOLIDAY BREAK
Nov 27	36	Population Ecology
Nov 29	37	Community Structure and Dynamics
Dec 4	NONE	EXAM 5 (Green Side of Exam Form)
Dec 6	N/A Assigned Readings	Preparation for Group Presentations
Dec 13	NONE	GROUP PRESENTATIONS (11:35-1:35 PM)

LABORATORY SCHEDULE (Subject to Change):

Date	Lab Exercise	Topic
Aug 23	2	Microscopes and The Cell
Aug 30	1	Understanding Experimental Design (PC Simulation)
Sept 6	3	Diffusion and Osmosis
Sept 13	4	Enzymes
Sept 20	5	Mitosis & Development
Sept 27	6	Photosynthesis
Oct 4	7	Plant Taxonomy, Diversity, & Structure
Oct 11	8	Animal Taxonomy, Diversity, & Structure
Oct 18	9	Comparative Vertebrate Structure
Oct 25	10	logical Transport Systems
Nov 1	11	Metabolic Rate & Thermoregulation in Animals
Nov 8	12	Genetics
Nov 15	15	Sensory Reception and Behavioral Response
Nov 22	HOLIDAY	THANKSGIVING HOLIDAY
Nov 29	14	Chaparral Ecosystem
Dec 6	13	Natural Selection Computer Simulation