

El Camino College

Mission Statement: The mission of El Camino College is to meet the educational needs of its diverse community and ensure student success by offering quality, comprehensive educational opportunities.

FALL 2009 Course Syllabus Biology 102, Section 1116

Course: Biology 102
Title: Principles of Biology II
Units: 5 units
Transfer Credit: CSU, UC

Instructor: Dr. Teresa P. Palos
Class Location: NATS 219 lecture and LS 105 lab
Class Day/Time: Lecture – M and W: 9:00 – 10:25am
Lab – T and Th: 9:00am – 12:10pm

Section: 1116

E-mail Address: tpalos@elcamino.edu

Office Location: Natural Sciences (NATS) 114

Telephone: (310) 660-3593 Ext. 5354

Office Hours: M, W and Th: 3:00 – 4:00pm

Catalog Description:

Prerequisites: Chemistry 1A with a minimum grade of C or the equivalent. Eligibility for English 1A is recommended preparation. The course is credit and degree applicable.

Lecture 3 hours, laboratory 6 hours.

This course offers a detailed study of eukaryotic cell anatomy, metabolism, and division, including the study of Mendelian genetics and the molecular genetics of eukaryotes. Prokaryotic cellular structure (eubacteria and archaea), microbial genetics and viruses are also studied. The scientific method is discussed in the lecture component and students implement elements of the process in various laboratory exercises. This course is one of three courses in the biology series designed for biology majors, including those students planning to pursue a career in medicine, dentistry, or other life sciences.

Course Objectives:

Goal 1: To gain a comprehensive understanding of the basic biology of prokaryotic and eukaryotic cells.

The student will be able to:

- A) Identify the characteristics of life.
- B) Distinguish between the major types of biologically significant polymers that comprise living things.
- C) Relate cellular structures with their functions.
- D) Compare and contrast the processes of mitosis, meiosis, and binary fission.
- E) Explain basic cellular processes such as DNA replication, transcription, translation, and control of gene expression.
- F) Describe the biochemical pathways of energy production.
 1. Compare and contrast fermentation, aerobic respiration, anaerobic respiration, and photosynthesis.
- G) Discuss methods to alter phenotypes and genotypes.
 1. Explain transformation, transduction, conjugation, and recombination.
 2. Differentiate between spontaneous and induced mutations.

Goal 2: To survey the eubacteria, archaea, and viruses.

The student will be able to:

- A) Describe characteristics of significant prokaryotic groups.
 1. Compare and contrast the eubacteria and the archaea.
 2. Explain the effects that prokaryotes have on the environment.
- B) Describe characteristics of significant types of viruses.
 1. Compare and contrast the viral lytic and lysogenic cycles.

Goal 3: To develop a basic understanding of the scientific method and gain an appreciation for various laboratory techniques.

The student will be able to:

- A) Apply the scientific process.
- B) Present data and articulate an understanding of what the data means in a written format, i.e. laboratory report.
- C) Utilize a compound microscope.
- D) Operate gel electrophoresis equipment.
- E) Perform simple microbiological manipulations, including the Gram stain.

Student Learning Outcome and Assessment - Cell Reproduction and Division: Mitosis

The student will be given the opportunity to explain the processes of each stage of mitosis in a written format. The student is expected to know the stages of mitosis: prophase, metaphase, anaphase, and telophase; arrange the stages in the appropriate order; correctly describe the activities of each stage; and relate the importance of mitosis to cellular life cycles in reproduction, regeneration, and development.

POLICIES:

Attendance: You are **expected** to attend every meeting of the class. Points will not be given for attendance. **I WILL DROP YOU FROM THE COURSE AFTER THE 6th ABSENCE (any combination of lecture and laboratory sessions).** If you choose to drop the course, it is **your** responsibility to drop the course OFFICIALLY. If you do not take the exams or complete the required assignments because you have not attended class and you are on my final roster at the end of the semester, I will assign a Fail as your grade. Please refer to p. 11 of the 2009/2010 El Camino College Catalog for additional details on attendance requirements.

Students with Disabilities: Appropriate accommodations for testing and evaluation can be arranged for students that provide documentation of a learning disability. The Special Resource Center is located in the Student Services Center and their telephone numbers are (310) 660-3445 (TTD) and (310) 660-3296 (Voice) for assistance/information. Please let me know ASAP whether such accommodations are necessary. Additional information is available to you in the 2009/2010 El Camino College Catalog beginning on p. 20.

Student Conduct: Please be considerate to others in the class. Rude behavior will not be tolerated. Do not talk or read newspapers during lecture. Pagers, cell phones, radios, and beeping watches must be turned off before entering class. Do not eat, drink, or smoke during lecture and lab. Please clean up after yourself before leaving the classroom and laboratory. ***SAFETY IN THE LAB IS OF PARAMOUNT IMPORTANCE. DO NOT LET YOUR GUARD DOWN AT ANY TIME AND ALWAYS KEEP SAFETY IN MIND WHILE WORKING!***

As for participation in class, I expect it! I will not assign points for participation but I will take participation into consideration at the assignment of the final course grade if you are very close to a higher grade.

CHEATING is unethical and most certainly not allowed. If you are caught cheating on an exam, quiz or any other assignment, you will be assigned a grade of a Fail equivalent to zero points. In addition to this penalty, you will be given assigned seating for subsequent exams and you will also bear the consequences of being reported to the appropriate college authority. Plagiarism is a form of cheating. If any part of the laboratory report is plagiarized, you will not receive credit for the report. Standards of Student Conduct (Board Policy 5138) are available to you in the 2009/2010 El Camino College Catalog beginning on p. 25.

COURSE REQUIREMENTS:

TEXTBOOKS:

- 1) *Biology*, 8th edition, 2008 by Raven, Johnson, Losos, Mason and Singer. Publisher: McGraw-Hill. ISBN: 978-0-07-322739-9.
- 2) *Biology Laboratory Manual*, 8th edition, 2008 by Vodopich and Moore. Publisher: McGraw-Hill. ISBN: 978-0-07-299522-0.

Highly and enthusiastically recommended:

A dictionary! An excellent one is *The American Heritage College Dictionary*.

Bring your textbooks to class and lab.

OTHER:

LAB: a bound notebook (plain or quadrule), color pencils, and hair ties if your hair is long (to be used when working with the Bunsen burner) are required. **You must also wear CLOSED shoes. Shoes that are OPEN at the toes are not appropriate.**

Evaluation Criteria: There will be 5 lecture examinations. The format will include a combination of the following: multiple-choice, true/false, matching, short answer and/or essay. There will be 2 tests in the laboratory. MAKEUP examinations are NOT allowed. You MUST take the exams as scheduled. If you miss an exam, you will receive zero points for that exam. Extra credit points are not an option. They will not be given. Scantrons (#882-E) and number 2 pencils are needed for the multiple choice component of the exams. You will have 5 quizzes throughout the semester. Each quiz will cover lecture and laboratory material and is worth 20 points for the lecture component and 10 points for the lab component. For the laboratory component, your notebook will be evaluated at the end of each lab period and you will have one laboratory report due. The details of the report will be specified in class.

Grading Procedures: Be aware that I do not give grades. You earn the grades.

Exam 1: 100 pts

Exam 2: 100 pts

Exam 3: 100 pts

Exam 4: 100 pts

Exam 5: 125 pts

Lecture Quizzes: 100 pts (5 @ 20 pts each)

Lecture, Subtotal 1: 625 pts (62% of total points)

2 Lab Tests: 200 pts

Instructor Evaluation of Lab Work (notebook): 75 pts (You must show me your notebook at the end of each lab period. IF YOU DO NOT DO SO, I WILL NOT GIVE YOU CREDIT. **NO EXCEPTIONS!!!**)

Laboratory Report: 50 pts

Lab Quizzes: 50 pts (5 @ 10 pts each)

Lab, Subtotal 2: 375 pts (38% of total points)

Subtotal 1 + Subtotal 2 = 1000 pts total for the course

A- 90 to 100% → 900 to 1000 pts

B- 80 to 89.9% → 800 to 899 pts

C- 70 to 79.9% → 700 to 799 pts

D- 60 to 69.9% → 600 to 699 pts

F- Below 60% → 599 pts and below

HOW TO STUDY FOR THIS CLASS:

- You will succeed in this class if you study consistently. **One to two hours of studying per week will NOT be sufficient. For every hour of lecture, you will need to invest two to three hours of study time outside of class.** For a 3 hour class per week, this is **6 to 9 hours** (this does not include time dedicated to the lab component!) **DO NOT underestimate the amount of time you need to dedicate to this class. DO NOT PREPARE AT THE LAST MINUTE FOR EXAMS. IF YOU DO, YOU WILL MORE THAN LIKELY NOT DO WELL ON THE EXAMS.**
- You **MUST** read. **Reading** is an integral component of the learning process. Reading before class is highly advisable. **To read is to examine and grasp the meaning of written or printed material.**
- **Memorizing a concept is not the same as understanding a concept.**
 - To **memorize** is to **commit to memory; learn by 'heart'.**
 - To **understand** is to **grasp or comprehend the meaning intended; to comprehend the nature and significance of an idea/concept.**

(Source: The American Heritage College Dictionary)
Do not confuse the difference between the two.
- **Reading, understanding, and memorizing** work together to help you learn the material.
- **Your focus?** The material presented in class is your focus for the exams. The reading will cover the same material and it will provide a broader context. As a consequence, you will learn more than what you are tested on!
- Note-taking: Utilize an outline to help with your note-taking. I may provide you with a broad outline of topics for each lecture (written or verbal) but **you** will take your notes. I will not do your work for you.
- **REVIEW** your notes soon after the lecture has occurred. **DO NOT WAIT** till the weekend!!
- **REWRITE** your notes. This is a great way to go over the material!! As you rewrite, supplement with material from the text.

- Apart from the required reading, I suggest study aids like flash cards. Make drawings and diagrams to help you learn. Don't put too much information on the flashcard. Use one word or concept on the front and one definition or one to two sentences, respectively, on the back.
- Utilize the publisher resources that are available with the textbook, i.e. CD-ROM, website, etc.
- Attend office hours. Be prepared for office hours. As you ask for clarification, I will also ask you questions regarding the material. Why will I ask questions? To help you gain an understanding of the material.
- Students that have earned **A** grades in my classes have employed a number of study techniques. They have offered words of advice and they include but are not limited to the following:
 - "Make sure to understand the material during lecture. Ask questions."
 - "Attend class and pay close attention..."
 - A number of students used the class handouts as the "backbone of chapter" covered and they used the "text to supplement material that is unclear in the handouts".
 - Another student would "take extensive notes during class".
 - "Read chapters and transfer additional info. onto printout (from computer download or handout distributed in class where appropriate)"
 - "...try to understand concepts rather than memorize everything individually."
 - "Don't assume the questions asked will only require recognition for the answer."
 - "Study as if you are studying for an essay exam, not a multiple choice exam."
 - "Review terms and definitions"
 - "If material is understood, keep reviewing!"
 - "Focus the studies on what is covered in lecture as this is mainly a lecture-based course Take **ACTIVE** notes on the slides passed out in class during lecture - anything not written down on the slides but is verbally stated by the professor should be noted. After class, read over the lecture slides and whatever notes taken during class, and refer to the textbook in order to clarify confusing/unclear concepts." I will add, if the textbook is not clear, SEE ME!

The statements above were indeed made by a number of former students and I thank them for their input. Take their advice!

Lecture Outline:

I may also delete or include additional material. The pages for deletion or inclusion will be specified in class.

DATE	TOPIC	ASSIGNMENT
Aug 31 Sep 2	Course Introduction Chemical Principles	Chapters 2 and 3
Sep 7 Sep 9	HOLIDAY – Labor Day Chemical Principles	Chapters 2 and 3
Sep 14 and 16	Cell Structure	Chapter 4
Sep 21 and 23	Membranes and Transport	Chapter 5
Sep 28 Sep 30	EXAM 1 (Chapters 1, 2, 3, 4, and 5) Energy and Metabolism	Chapter 6
Oct 5 and 7	Cellular Respiration and Fermentation	Chapter 7
Oct 12 and 14	Photosynthesis	Chapter 8
Oct 19 Oct 21	Cell Communication EXAM 2 (Chapters 6, 7, 8, and 9)	Chapter 9
Oct 26 Oct 28	Cell Division: Mitosis and Binary Fission Meiosis	Chapter 10 Chapter 11
Nov 2 Nov 4	Genetics I Genetics II	Chapter 12 Chapter 13

Nov 9	EXAM 3 (Chapters 10, 11, 12, and 13)	
Nov 11		DNA and DNA Replication
		Chapter 14
Nov 16	Gene Expression: Transcription	Chapter 15
Nov 18	Gene Expression: Translation	Chapter 15
Nov 23	Control of Gene Expression	Chapter 16
Nov 25	Biotechnology	Chapter 17
Nov 30	EXAM 4 (Chapters 14, 15, 16)	
Dec 2		Viruses, Prions, and Viroids
		Chapter 27
Dec 7	Viruses, Prions, and Viroids (cont'd)	Chapter 27
Dec 9	Bacteria and Archaea	Chapter 28
Dec 14	Bacteria and Archaea (cont'd)	Chapter 28
Dec 16	EXAM 5 (Chapters 17, 27, and 28)	

NOTE: LECTURE MATERIAL MAY BE PRESENTED IN LAB. I WILL LET YOU KNOW WHEN THIS HAPPENS.

Lab Outline:

For each lab exercise, read the lab beforehand and prepare in the following manner:

In your notebook, include a Table of Contents (leave two blank pages at the start of your notebook) and for each exercise:

- *Title (of the exercise): one line*
- *Purpose (of the exercise): one to two sentences*
- *Materials (to be used): a list*
- *Directions (step-by-step): a list*
- *Expected Results/Observations: drawings, written comments, etc.*

At the end of each lab period, you will show me your lab notebook. I will mark that I have seen it and evaluated it based on what is to be included for each exercise (see above).

The details of your lab report will be specified in class.

DATE	TOPIC	ASSIGNMENT (Vodopich and Moore)
Sep 1	-Lab Safety (Laboratory Protocol) and Check-In -Introduction: The Science of Biology	Chapter 1
Sep 3	-Biologically Important Molecules	Exercise 6
Sep 8 and 10	-The Cell: Structure and Function	Exercise 4
Sep 15	-Diffusion and Osmosis	Exercise 9
Sep 17	-Cellular Membranes	Exercise 10
Sep 22 and 24	-Enzymes	Exercise 11
Sep 29 and Oct 1	-Respiration	Exercise 12
Oct 6 and 8	-Photosynthesis	Exercise 13
Oct 13	-Mitosis	Exercise 14
Oct 15	-Meiosis	Exercise 15
Oct 20	-Review for Lab Test 1	
Oct 22	-LAB TEST 1	

BIOLOGY 102 – Principles of Biology II

Acknowledgement that YOU have received, read, and understood the syllabus.

NAME (PRINT):

ID:

SIGNATURE:

E-mail address or a telephone number where I can reach you:



OPTIONAL: Tell me a little about yourself.

Which life science and chemistry courses have you taken?

What do you enjoy reading?

What is your career goal?
