

## BIO 2 CELLS, MOLECULES, AND GENES

### COURSE INFORMATION:

<b>Instructor:</b>	Tom Landerholm, Humboldt 211E, 278-6152, <a href="mailto:landerholm@csus.edu">landerholm@csus.edu</a>
<b>Office Hours:</b>	Monday 1:00pm-2:00pm, Thursday 3:00pm-4:00pm <ul style="list-style-type: none"> <li>• additional office hours by appt</li> </ul>
<b>Lecture:</b>	Monday and Wednesday – 8:00am-8:50am, Mariposa Hall 1001 (section 01)
<b>Laboratory:</b>	Monday, 2:00-4:50pm, Sequoia 208 (section 03, Faye Afshari) Wednesday, 9:00-11:50am, Sequoia 208 (section 04, Dave Waddell)
<b>Activity:</b>	Friday, 9:00-10:50am, Humboldt Hall 102 (section 05, Dave Waddell) Wednesday, 1:00-2:50pm, Eureka Hall 109 (section 07, Dave Waddell)
<b>Text:</b>	Campbell, N.A., Reece, J.B., Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V., and Jackson, R.B. <u>Biology</u> . Eighth edition. San Francisco, CA. Pearson, Benjamin Cummins Publishing. 2008.
<b>Lab Manual:</b>	Ballard R., Ewing, N., Nguyen, H., and Trueblood, N. <u>Cells, Molecules, and Genes: A Lab Manual for Bio 2</u> . Spring, 2009. *Labs will be distributed electronically through SacCT.
<b>Required for Lab:</b>	Lab fee; Laboratory notebook (with stitched or glued binding; preferably 8.5x11 inch pages; pre-numbered is good, but not required; <u>without</u> carbon copies)
<b>Course Websites:</b>	All course materials can be accessed via SacCT with information also available at Dr. Landerholm's CSUS web site. You will be able to download the course syllabus and course schedule, study questions, previous exams and other materials. You will also be using the Mastering Biology website that accompanies the text. Access codes are provided with the text. If you've purchased a used text, you can still purchase an access code. The Student Technology Center (STC) in AIRC room 3007 can help you with technology issues if I am unavailable.
<b>Prerequisites:</b>	BIO 1 and CHEM 1A (or equivalent courses) – please talk to me if you have not completed CHEM 1A.

### Catalog Description:

BIO 2. Cells, Molecules, and Genes. Introduction to molecular and cellular biology and genetics. Topics include biomolecules, cell structure and function, cellular energetics, molecular flow of information, cell division, and genetic inheritance. Development of scientific skills and a scientific mindset will be emphasized throughout the course, particularly in lab exercises and activities. Designed for science majors. Lecture three hours, laboratory three hours, activity 2 hours. Prerequisites: BIO 1 and CHEM 1A. 5 units.

### EXPECTED LEARNING OUTCOMES:

In designing this course, the Department agreed that students should be able to do the following by the end of the course:

1. Explain current thought on the diversity and origins of cellular life.
2. Explain the molecular constituents of cellular life and their relationship to inorganic molecules such as water.

3. Understand that life on Earth is fundamentally cellular and that all cells store their hereditary information as DNA.
4. Explain the structure and function of cell membranes, cytoskeleton and organelles.
5. Explain the use of external energy sources in the building and maintenance of cellular structure and function.
6. Explain the molecular flow of information from DNA to RNA to protein in cellular structure and function.
7. Understand cell to cell communication and interactions with the extracellular environment.
8. Explain the transmission of genetic information through sexual and asexual reproduction.
9. Explain how cellular diversity arises from inexact copying and transmission of genetic information.
10. Use the scientific method and scientific measurement to develop and test hypotheses.
11. Use scientific tools, including microscopes, computers and basic cell and molecular analysis techniques.
12. Interpret scientific literature and employ scientific communication skills.
13. Express personal values on current applications of cellular and molecular biology.

**COURSE POLICIES:**

**I. Evaluation of student performance**

The course has three components (lecture, lab and activity) and your grade will be based upon your performance across all three portions of the course.

**A. Attendance.**

Attendance is required for all three components of the course. I do understand that there are times that you must miss a class due to illness, etc. If you must miss an exam you must provide me with documentation that indicates the reason for your absence as soon as possible after the absence. Acceptable excuses include illness, injury, health emergencies or death of an immediate family member and possibly others.

Makeup Tests/Assignments: You must schedule a makeup exam at the first class meeting after you return to school or earlier. It is **your** responsibility to actively communicate with me to ensure that this occurs. If you miss class and there was an assignment, you are responsible for contacting me to find out *if* you can make up the assignment. Late assignments will receive 50% credit if turned in at the next class period following the absence. No assignments will be accepted after the class following the absence unless extenuating circumstances apply.

**B. Lecture**

There will be four lecture exams worth 100 points each. Each will cover approximately one-quarter of the course. After the first two exams, there will be an exam review assignment in which you will correct the questions you missed (worth 10 points each). There will be three open-book online quizzes (through Mastering Biology) that will be worth 20 points each and will be due before each exam review. In addition, there will be group and individual activities during lecture that will be worth 2-5 points. You will not *usually* be able to make these up if you miss class, but it is your responsibility to find out if you can do an alternative assignment.

Lecture exams (4) -----	400 pts
Exam review/correction (3) -----	30 pts
Mastering Biology online quizzes (4) -----	80 pts
Online and In-class activities (TBA)-----	approx. <u>20 pts</u>

Lecture total----- 530 pts

To be successful in this class, I **STRONGLY ENCOURAGE** you to read the assigned chapters before coming to class and to utilize the Mastering Biology website for content review. It generally takes **THREE** times viewing the same material for it to really sink in – therefore, the best strategy is 1) to read the chapter before class, 2) to come to class and actively take notes, ask questions and participate in discussions, and 3) to review your notes or use the Mastering Biology activities for content review within 24 hrs of the class. My style is to incorporate discussion into the lecture. I will be asking you a lot of questions in order to determine what material needs the most attention. If you come unprepared, I will not be able to effectively help you understand more difficult concepts.

**C. Laboratory**

You are required to maintain a laboratory notebook. We will discuss this in detail in the lab and in a separate handout. The lab notebooks will be collected several times during the semester. The dates that you hand in lab books will be announced at least one week in advance. Finally, attendance is required at all labs. Each lab missed will cause a loss of 10 pts from your attendance total. If you did not attend the lab, you should note that in your lab notebook. If you clearly indicate that you did not attend, you may use your partners' data. In addition to noting that you were not present you must also acknowledge the source of the data that you used. You **MUST** read and attempt to understand the activities prior to coming to lab. If I discover that too many are coming to lab unprepared, I will give quizzes at the beginning of each lab.

Lab notebook -----	130 pts (or 10 points/lab)
Attendance -----	<u>70 pts</u> (or 5 points/lab)
Laboratory total-----	
200 pts	

**D. Activities**

Attendance at activities is also very important. You will be asked to prepare for each meeting. The required preparation will vary from week to week as will the activities. In some instances, we will focus on problems and homework associated with the lecture, so your preparation may amount to bringing completed homework. In other instances we will be doing computer work in groups or discussing specific issues or research topics. In these instances, your preparation may be to read in advance. In this case, you may be asked to bring a summary or list of ideas with you to class. Most of the activities will be worth 10 points each. If you cannot make up in-class work, you will be given an alternative assignment if your absence is excused (see Attendance section for acceptable absences). There will be an ongoing project that will involve a short paper and poster presentation. This project will count for half of your activity grade.

Assignments and Group Activities-----	100 pts
Attendance -----	25 pts
Final Poster Presentation -----	<u>75 pts</u>
Activity total -----	
200 pts	

**E. Course Grade**

Course Points:	
Lecture -----	530 pts
Laboratory -----	200 pts
Activity -----	<u>200 pts</u>
Course Total -----	
930 pts	

Grade assignment is based on percentage of total points earned. The following grading scale will be used to determine final grades.

A = 90-100%	of total points
B = 80-89%	of total points
C = 70-79%	of total points
D = 60-69%	of total points
F = < 60%	of total points

Borderline grades may be adjusted upward as determined by other factors, including attendance and participation in lab and class. A borderline score is defined as the intervals 89-90%, 79-80%, 69-70%, and 59-60% of total points.

## II. Course Policies

### Classroom Etiquette

- Please arrive on time. If you must enter late, please do so quietly so as not to disrupt the class.
- TURN OFF CELL PHONE AND OTHER ELECTRONIC DEVICES BEFORE COMING TO CLASS.
- No text messaging under the desk.
- If you feel the need to use a laptop in class, please see me. I will arrange for you to sit at the front of the room. The use of laptops is distracting to some students.

### Policies on Academic Misconduct

Cheating or any type of improper communication between students during an exam or quiz is considered *inappropriate academic conduct* and will not be tolerated. Students who fail to comply will, at minimum, be given a zero for that test. If there is specific evidence of cheating, the incident will be reported to the Biology Department Chair and the Dean of Students, and the student will receive an “F” for the course. Cheating on any type of exam or quiz, regardless of the point value, is considered to be an egregious offense to the academic honesty of this course, and thus warrants an "F" grade.

**Plagiarism** is a form of cheating *whether intended or not*. Plagiarism is defined as taking another’s ideas or words as one’s own. If you use another person’s ideas or words, you must give them credit (that is, reference them) and not pass them off as your own. If you use someone’s exact language, you must quote the passage and cite the author; if you paraphrase the ideas into your own words, you must still specifically cite the source from which you obtained the material. If in doubt, please ask!! Plagiarism is considered to be *inappropriate academic conduct*, and is subject to the same disciplinary actions outlined above for cheating. In other words, if you plagiarize, at minimum you will receive a “zero” for the assignment, and the incident may, at the discretion of the instructor, be reported to the Biology Department Chair and the Dean of Students. If, in the opinion of the instructor, the plagiarism is intentional, this is considered to be an egregious offense against academic honesty that warrants the assignment of both an F grade in the course and the referral of the student to the Dean of Students for evaluation. This will occur regardless of the point value of the written assignment. I urge you to take this warning seriously. Please note that the class textbook, although used extensively, is still a reference, and must be cited accordingly. Websites or other sources of information must be used carefully, both to ensure their accuracy and the extent to which they provide language for your assignments. ALWAYS take information from sources and integrate them with your own thoughts before writing your answers. Then, cite accordingly. Plagiarism at CSUS has been defined, in part, as

"The act of incorporating into one's own work the ideas, words, sentences, paragraphs, or parts thereof, or the specific substance of another's work without giving appropriate credit thereby representing the product as entirely one's own. Examples include not only word-for-word copying, but also the "mosaic" (i.e. interspersing a few of one's own words while, in essence, copying another's work), the paraphrase (i.e. rewriting another's work while still using the other's fundamental idea or theory); fabrication (i.e. inventing or counterfeiting sources), ghost-writing (i.e. submitting another's work as one's own) and failure to include quotation marks on material that is otherwise acknowledged" (CSUS Memorandum PM 90-04; January 15, 2004)

Science as a discipline has its foundation in truthful work, and as a student of science, it is expected that you uphold this standard. When in doubt, cite your source. But remember that you should be writing down your original thoughts and ideas as they relate to your sources. A series of quotes, while legal, is not your work!

As mentioned, even though group data collection and discussion is encouraged in the laboratory and activity, all laboratory assignments are INDIVIDUAL assignments. You may consult with your lab partners, but are expected to present and analyze data yourself. For example, you must make your own graphs, tables, etc. and must discuss results in your own words. Failure to complete individual work in lab/activity will be considered *inappropriate academic conduct*, and is subject to the same disciplinary actions outlined above for cheating. If in doubt about any of these issues, please ask your instructor!!

Actions that will be considered cheating include, but are not limited to:

1. Communication between students during an exam or quiz.
2. Looking at another student's work.
3. Having written materials other than exam papers out during the exam or quiz.
4. Providing answers to another student during exams or quizzes.
5. Taking on-line quizzes with another individual.
6. Plagiarizing essays or other written activities.
7. Presenting falsified data.

### III. University Policies

#### Reasonable Accommodation Policy

If you have a disability and require accommodations, you need to provide disability documentation to Services for Students with Disabilities (SSWD). For more information please visit the [SSWD website](http://www.csus.edu/sswd/) (<http://www.csus.edu/sswd/>). They are located in Lassen Hall 1008 and can be contacted by phone at (916) 278-6955 (Voice) (916) 278-7239 (TDD only) or via email at [sswd@csus.edu](mailto:sswd@csus.edu). Please discuss your accommodation needs with me after class or during my office hours early in the semester.

#### Academic Honesty

The University policy on academic honesty can be reviewed at the following web link: <http://www.csus.edu/umannual/student/UMA00150.htm>. **If you have never read this policy, please take the time to do so because it will help you avoid inadvertently engaging in plagiarism or other forms of academic dishonesty in all of your classes, not just this one.**

### IV. Adding and Dropping the Course

- **During the first two weeks all adds in all courses** in the Department of Biological Sciences are completed by the instructor (not through MySacState).
- **During the first two weeks, the course may be dropped** using MySacState.
- **Drops after the second week** require serious and compelling reasons (includes medical issues, excessive course load, significant career or job changes).
- **During weeks three and four** a green add/drop form (available in the department office) must be signed by the instructor and the chair. This form is processed in the department office.
- **After the 4<sup>th</sup> week**, a white generic University Add/Drop form is necessary. (These will be available in the department office beginning Sept. 26th.) This form requires the instructor's, chair's and dean's signatures and is processed in Admissions and Records. Drops after the 4<sup>th</sup> week will result in a W on your transcript for the course.
- **The last day to drop is the end of the 6<sup>th</sup> week.**
- **After the 6<sup>th</sup> week** all drops require approval of the instructor, department chair and dean. Drops during this periods must be for career-related or medical reasons beyond control of the student and must be verified in writing by a doctor or employer.
- **No drops are allowed during the last week of instruction.**
- Please remember **there is no such thing as an automatic drop**. You are responsible for entering the drop on either on MySacState or by petition. Failure to do this could result in a grade of "U" or "F".

**A Note on Furloughs:** For the past 10 years the CSU system has suffered chronic under-funding. This year, because of the state economic crisis, the budget cuts are draconian, \$584 million, the worst ever in decades. The CSU administration is attempting to manage these cuts by dramatically increasing student fees and by furloughing almost all University employees, including faculty, staff, and administrators. A furlough means mandatory un-paid days off for employees; there are 18 of these this year for faculty. Nine of these will occur this semester.

Please realize that on furlough days, faculty are *legally* not allowed to be on campus and have signed agreements that they will not engage in any University business (grading, emailing, etc.) Please be respectful and understanding of what furlough days mean for both faculty and you as students.

If you would like to take action, or simply learn more, I strongly recommend you contact the Students for Quality Education at CSU Sacramento: e-mail: [csus.sqe@gmail.com](mailto:csus.sqe@gmail.com), web: <http://www.alliancefortheesu.org/signup.html>