

Frontiers in Biology (Biol 3000) Syllabus

MWF 3:00 – 3:50; Room C214

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Office hours: Tuesdays: 11:30-1:30 am or by appointment, room N252

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Scope of course

Different topics of biology that are currently in the forefront of research and public awareness will be discussed. Emphasis is on further development of biological principles learned in lower-division general education courses in natural sciences and in preparing students to deal with questions and decisions relating to biological developments affecting their lives. Topics vary from semester to semester. Some of the topics that may be included are genetic engineering, nanotechnology, symbiosis, antibiotic resistance, mad cow disease, agricultural practices, and cancer. May not be used to count toward electives in the biology major. Satisfies G.E. area F1. Prerequisites: Junior standing.

Course Goals

1. Provide an overview of the issues, principles, methodologies, and perspectives of biology.
2. Develop an understanding to allow effective communication on biological issues.
3. Provide a working background to critically evaluate biological issues and develop continuous inquiry and life-long learning.
4. Provide the framework to understand, examine critically, and use information from various sources to answer questions relevant to biology.
5. Appreciate the relationships between the fields of biology, chemistry, physics, geology, and the other sciences with an emphasis on how these fields are closely inter-related.
6. Appreciate the interdependence of humans on natural ecosystems and the diversity of life on earth.
7. Develop more informed and responsible citizens with respect to issues concerning the living world.

Required Text and other materials

- *Biology 3000, California State University Stanislaus, Schroeder*. This custom-made book is adapted from *Biology: Science for Life 4/E* by Colleen Belk and Virginia Borden Maier. It is the same as the original version but with fewer chapters.
- Access to masteringbiology.com. You will need an access code, included with the purchase of a new textbook. If you have a used textbook, you may have to buy the access code separately. Once you gain access, you'll need course ID: MBSCHROEDER63202.
- Access to BlackBoard: csustan.edu/Blackboard/

Grading

	Points	% of final grade
Exam 1	100	20
Exam 2	100	20
Exam 3	100	20
MasteringBiology	100	20
Short talk	50	10
Term Paper	50	10
Total	500	100

Exams

- three exams; multiple choice, matching, true or false

Assignments: Mastering Biology

- one assignment per chapter; due by 6pm on day after I finish lecturing on chapter.

Oral Presentation

- will research literature on assigned topic and give a 5- to 10-minute presentation; will work in pairs

Term paper

- will research literature on assigned topic and write a 750- to 1,000-word essay with at least three sources cited.

Final grade

93-100% = A	87-89% = B+	77-79% = C+	67-69% = D+
90-92% = A-	83-86% = B	73-76% = C	60-66% = D
	80-82% = B-	70-72% = C-	0-59% = F

Other

- Please check syllabus first if any questions; if still in doubt, then ask me
- No makeup exams
- Please make use of the many learning resources available to you, including MasteringBiology.com, and my office hours. In addition, free on-campus tutoring is available at 1) The Central Valley Math & Science Alliance (Naraghi Hall 124), and 2) Tutoring Services (CSUS Library 112).

Tentative Course Outline

Week	Date	Chapter Title	Chapter
1	1/27	Course overview	
	1/29	Introduction to the scientific method	1
	1/31	Scientific literature: research and critical evaluation	1
2	2/3	Future of the scientific method	1
	2/5	Water, biochemistry, and cells	2
	2/7	Nanotechnology	2
3	2/10		2
	2/12	Nutrients and membrane transport	3
	2/14	The "omics"; nutritional genomics	3
4	2/17		3
	2/19	Enzymes, metabolism, cellular respiration	4
	2/21	The food movement and the ecological model of agriculture	4
5	2/24		4
	2/26	<i>oral presentations</i>	
	2/28	<i>oral presentations</i>	
6	3/3	Exam 1	
	3/5	Photosynthesis	5
	3/7	Biofuels	5
7	3/10		5
	3/12	DNA synthesis, mitosis, and meiosis	6
	3/14	Cancer research	6
8	3/17		6
	3/19	Mendelian and quantitative genetics	7
	3/21	Personalized medicine	7
9	3/24		7
	3/26	Complex patterns of inheritance	8
	3/28	Epigenetics	8
10	3/31		8
	4/2	<i>oral presentations</i>	
	4/4	<i>oral presentations</i>	
11	4/7	Exam 2	
	4/9	Gene expression, mutation, and cloning	9
	4/11	Genetically modified organisms	9
12	4/14		9
	4/16	The evidence for evolution	10
	4/18	The Neanderthal genome	10
13	4/21	Spring break!	
	4/23		
	4/25		
14	4/28		10
	4/30	Natural selection	11
	5/2	The problem of antibiotic resistance	11
15	5/5		11
	5/7	Immune system, bacteria, viruses, and other pathogens	12
	5/9	Warrior Day! (no classes after noon)	
16	5/12	The role viral DNA in the human genome	12
	5/14		12
	5/16	<i>oral presentations</i>	
17	5/21	Exam 3 2-4pm	