

**BIO 2.1 Fundamentals of Biology:
Cell and Molecular Biology**
Spring 2018 Syllabus, Santa Rosa Junior College
Lecture: MW 12:30-1:50 pm, 1801 Baker Hall
Lab: MW 9:00-12:00 pm, 1885 Baker Hall

Dr. Katy Jamshidi

Office: 1882 Baker Hall

Office Hours: MW 2:00-3:00 pm, TTh 11:00-11:50 am, or by appointment

Phone: 707-521-6987 (but e-mail is a much better way to reach me!)

E-mail: kjamshidi@santarosa.edu

Course Webpage: <https://santarosajc.instructure.com/courses/28310>

This syllabus is intended to give the student guidance in what may be covered during the semester and will be followed as closely as possible. However, the instructor reserves the right to modify, supplement and make changes as needs arise.

Required Materials:

- *Textbook:* Reece et al. 2010. Campbell Biology 9th edition (ISBN: 9780321558237)
 - A copy is on reserve in library: call number is QH308.2 .C34 2011 PC Metzler
 - You will need to bring your student ID to access reserve materials.
- *Lab Manual:* Santa Rosa Campus, Spring 2018. BIO 2.1 Laboratory Manual (provided)
- Scan-trans for lecture exams

Recommended Materials:

- Alberts et al. 2014. Essential Cell Biology 4th edition (ISBN: 9780815344544)
 - A copy is on reserve in library: call number is QH581.2 .E78 2014
 - You will need to bring your student ID to access reserve materials.
 - *I teach material and use figures / movies from this textbook in quite a few lectures. For your reference, I've included the relevant chapters from this book in italic on the course schedule.*
 - *It's also a great place for curious students to look for more in-depth information about the topics we cover in class!*
 - *If you would like your own copy to read, consider renting it from an online store, or purchasing a less expensive, used copy of an earlier edition such as the 3rd edition.*
- Jan A. Pechenik, 2013. A Short Guide to Writing About Biology 8th edition
 - Earlier edition on reserve in library: call number is QH304 .P43 2004 PC Metzler
 - You will need to bring your student ID to access reserve materials.
 - *This book is great for learning about scientific writing and presentations. See page 3 of syllabus for recommended readings in this book.*

Course Description: This is a rigorous introductory course intended to introduce students majoring in biological sciences to the fundamental concepts in cell and molecular biology, including: cell structure and function, origin, evolution, and diversity of cells, biochemistry, metabolism, molecular genetics, cell regulation, cell differentiation and evolutionary development.

Official Course Outline:

https://portal.santarosa.edu/SRweb/SR_CourseOutlines.aspx?CVID=37967&Semester=20187

Grading:

Lecture Exams	400
Homeworks on Canvas	20
Canvas Problem Sets	100
Lab Exam, Quizzes & Assignments	220
Lab Write-Ups/Presentations	150
Lab Attendance/Participation	25
<i>Total</i>	<i>915 points</i>

Grade Distribution

90 – 100%	A
80 – 89%	B
70 – 79%	C
60 – 69%	D
<59%	F

Drop Dates:

- Last day to drop and get a refund: 1/28.
- Last day to drop without a "W": 2/4.
- Last day to drop with a "W": 4/22.

Course Policies and Information

Academic Integrity: All written work is to be original; plagiarism of any kind will result in a failing grade on that assignment. Students who plagiarize or cheat may be suspended (for one or two class meetings by the instructor) and referred to the Vice President of Student Services for discipline sanction, in cases of egregious violation. Please read the college policy / procedure on academic integrity at: <https://rightsresponsibilities.santarosa.edu/academic-integrity>

Attendance and Participation: Students are expected to be present, prepared and on time for each class meeting and to participate in discussions and group activities. Please contact me in advance if you cannot attend class due to illness or emergency. Each unexcused lab absence results in a deduction of 3 points from your lab attendance grade; each time you are more than 5-10 minutes late to lab OR leave lab before lab activities are finished, results in a deduction of 1 point. **You may be dropped** if your absences exceed 10% of the total hours of class time (10.5 hours).

Cell phones: Cell phones are to be turned to silent mode during class. Their inappropriate use distracts both you and the instructor. It is, however, acceptable to record lecture audio, answer in-class questions, and/or view the PowerPoint slides using your cell phones, tablets, or laptops. Cell phones must remain in your bag during exams. Any cell phone use during an exam will be considered cheating.

Classroom Etiquette and Respect: The best way to learn is through active participation; therefore, we respect others when talking by listening actively and by being polite even when we disagree with another's viewpoint. The following behaviors interfere with student learning and are inappropriate during class: arriving late or leaving early, off-topic use of cell phones or other electronic devices, packing up before the end of class, chatting with neighbors, and any offensive or demeaning behavior.

Course Website: The Canvas website (web address is on first page of syllabus) is going to be very important for this course. Materials that you will need to access on the Canvas page include: lecture slides, quizzes, review sheets, homework assignments and due dates, important announcements, supplementary articles to read, helpful links for websites and animations, lab data and information, and your grades. It is important that you put the email address that you check most frequently into your Canvas settings.

Disability-Related Accommodations: If you need disability-related accommodations for this class, such as a note taker, test taking services, special furniture, etc., please provide the Authorization for Academic Accommodations (AAA letter) from the Disability Resources Department (DRD) to the instructor in the first week of class. You may also speak with the instructor privately during office hours about your accommodations. If you have not received authorization from DRD, it is recommended that you contact them directly. Their office is located on the 3rd floor of Bertolini Student Center – (707) 527-4278.

Emergency Evacuation Plan: In case of emergency, dial 707-527-1000 from a cell phone or 1000 from any campus phone. In the event of an emergency during class that requires evacuation of the building, please leave the class immediately, but calmly. Our class will meet in the parking lot between Baker Hall and Bailey Hall to make sure everyone got out of the building safely and to receive further instructions. If you are a student with a disability who may need assistance in an evacuation, please see me during my office hours as soon as possible so we can discuss an evacuation plan.

Exam Return Policy: It is the policy of the Life Sciences Department to not return exams to students. Once graded, your exams will be filed in my office and available for review during the semester. After each exam is graded **you have one week** to hand in any rebuttals, **in writing**, concerning the grading of that exam. After that week, your grade will remain as given. After final course grades are posted, students have two months to request an appointment to review any exams from the previous semester. Exams will be kept in my office for a period of one semester, after which time they will be shredded.

Homeworks: There are a few homework assignments that you will turn in on Canvas during the semester. The due dates for these assignments will be on the Canvas calendar. These assignments are designed to help you engage with particularly challenging lecture material so that you will be more prepared for exams. Pay attention to the Canvas modules to find these assignments and the instructions to complete them.

Make-up Exams: Lecture exams may be made up only with **prior approval** and at the instructor's discretion. Extenuating circumstances must be supported by official documents (signed doctor's note, etc.). Lecture exams must be made up before the next lecture period. The lab exam requires special setup of the lab room and **cannot** be made up if missed.

Problem Sets on Canvas: Every one to two weeks, there will be a 10-point online "quiz" for you to complete on Canvas. These questions will be mainly multiple choice, true/false, or fill-in-the-blank, and **you are encouraged to study for them** and then try to complete them without using your notes. The questions will be easier than exam questions, but they should help you check up on your understanding of the material between exams. The due dates for these problem sets will be on the Canvas calendar. Your one lowest problem set score will be dropped.

Special Considerations: If you have any special needs or concerns, please be sure to let me know. We will be working in a hands-on environment; therefore, challenges may arise that do not generally come up in a lecture classroom.

Suggested readings in Jan A. Pechenik, 2013. A Short Guide to Writing About Biology 8th edition:

These will help you as you research and write your papers for the Sudden Oak Death project. There is an earlier edition of this book on reserve in the library (see 1st page of syllabus for call number). The chapter numbers might be different, but the material is still very useful!

- Reading science: Chapter 3: General Advice on Reading and Note-Taking
- General rules about scientific writing: Chapter 1: Introduction and General Rules
- Writing scientific research reports: Chapter 10: Writing Laboratory and Other Research Reports
- Revising your paper and reviewing others' work: Chapter 6: Revising
- Understanding and writing about statistics: Chapter 4: Reading and Writing about Statistical Analyses
- Preparing talks and poster presentations: Chapter 11: Presenting Research Findings

Bio 2.1 Fundamentals of Biology: Cell and Molecular Biology

Spring 2018 Tentative Class and Exam Schedule

*Note: Readings marked in italic are from Alberts Essential Cell Biology textbook (see **recommended materials** on first page of syllabus)*

Week	Date	Lecture topic	Lecture reading	Lab topic	Lab reading	Assignments due
1	1/17	What is Science?	Review Chapter 1	Introduction Characteristics of Life	pp. i.1 – 1.9	
2	1/22	Cell theory and Cell diversity	Sections 26.6, 27.1, Mazzarello (1999)	Microscope I: Use and Care Microscope II: Introduction to Cells	pp. 2.1 – 2.8	<input type="checkbox"/> Quiz: Safety and Sanitation (10 pts, in lab)
	1/24	Cell diversity	Sections 6.2-6.3, 6.5	Microscope III: Eukaryotic Diversity Microscopy IV: Bacteria	pp. 3.1 – 3.11	<input type="checkbox"/> Quiz: Microscope Use & Care (10 pts, in lab); <input type="checkbox"/> Answer as many lab manual questions as possible before lab!
3	1/29	Membrane structure	Sections 5.3, 7.1-7.5 (Ch. 11 ECB)	Chemistry Review	pp. 4.1 – 4.11	<input type="checkbox"/> <u>1/28</u> : Problem Set due (10 pts, Canvas)
	1/31	Membrane transport	Sections 5.3, 7.1-7.5 (Ch. 12 ECB)	Macromolecules I, II, III: Functional Groups, Carbohydrates, Proteins	pp. 5.1 – 5.11	<input type="checkbox"/> Answer as many lab manual questions as possible before lab!
4	2/5	Protein structure and function	Section 5.4 (Ch. 4 ECB)	Macromolecules IV, V: Lipids, Nucleotides & DNA	pp. 5.12 – 5.20	<input type="checkbox"/> <u>2/4</u> : Problem Set due (10 pts, Canvas) <input type="checkbox"/> Quiz: Chemistry (25 pts, in lab) <input type="checkbox"/> Answer as many lab manual questions as possible before lab!
	2/7	Protein structure and function		Enzymes I	pp. 6.1 – 6.6	
5	2/12	Enzymes and inhibitors	Sections 8.1-8.2, 8.4-8.5 (Ch. 3, 4 ECB)	Enzymes II	pp. 6.6 – 6.8	<input type="checkbox"/> <u>2/11</u> : Problem Set due (10 pts, Canvas) <input type="checkbox"/> Enzymes graphs due (Canvas, 5 pts + 2 EC); <input type="checkbox"/> Enzymes lab manual questions due (in lab on paper, 5 pts)
	2/14	Signal transduction	Sections 11.1-11.3 (Ch. 16 ECB)	Lab Exam (100 pts) (through Macromolecules)		<input type="checkbox"/> <u>2/18</u> : Problem Set due (10 pts, Canvas)
6	2/19	No class, no lab				
	2/21	Signal transduction	Section 11.4	PV92 – DNA Extraction & PCR; Library resources introduction	pp. 7.1 – 7.8	

Week	Date	Lecture topic	Lecture reading	Lab topic	Lab reading	Assignments due
7	2/26	Introduction to SOD project	DiLeo et al. 2009	Lecture Exam 1 (100 pts) (includes Enzymes lab material as well)		
	2/28	DNA / chromosome structure	Sections 5.5, 16.1, 16.3, O'Connor (2008) (<i>Ch. 5 ECB</i>)	Pepperwood Preserve Field Trip		
8	3/5	DNA replication	Section 16.2 (<i>Ch. 6 ECB</i>)	SOD Leaf Inoculation		<input type="checkbox"/> 3/4: Problem set due (10 pts, Canvas) <input type="checkbox"/> Homework due: DNA replication (5 pts, Canvas)
	3/7	Molecular genetics: Central dogma and transcription	Sections 17.1-17.2 (<i>Ch. 7 ECB</i>)	PV92 – Gel Electrophoresis; Discuss scientific paper format: intro	pp. 7.8 – 7.15	<input type="checkbox"/> Paper format assignment due (10 pts, Canvas)
9	3/12	Molecular genetics: RNA processing, translation	Sections 17.3-17.4	SOD Leaf Analysis; Discuss scientific paper format: methods	<i>Ch. 1 and Ch. 10 of Pechenik book</i>	<input type="checkbox"/> 3/11: Problem set due (10 pts, Canvas) <input type="checkbox"/> Quiz: Micropipettor Use (10 pts, in lab)
	3/14	Molecular genetics: mutations, DNA damage and repair	Sections 17.5, 16.2	GFP – Plasmid Miniprep; Discuss SOD results; Discuss scientific paper format: results	<i>Ch. 10 of Pechenik book</i>	
Spring Break						
10	3/26	Intracellular transport	Section 6.4, Canvas materials (<i>Ch. 15 ECB</i>)	Drosophila I: Introduction; Discuss scientific paper format: discussion	pp. 7.16 – 7.21 <i>Ch. 10 of Pechenik book</i>	<input type="checkbox"/> 3/25: Problem set due (10 pts, Canvas)
	3/28	Intracellular transport / Cytoskeleton	Section 6.6 (<i>Ch. 17 ECB</i>)	Drosophila II – Parental Crosses	pp. 8.1 – 8.8 <i>Ch. 10 of Pechenik book</i>	<input type="checkbox"/> Basic Genetics problem set due (10 pts, Canvas); <input type="checkbox"/> Bring SOD drafts: peer feedback
11	4/2	Cytoskeleton	Section 50.5	GFP – Gel Electrophoresis & PCR; GFP project overview (part 1)	pp. 8.9 – 8.11	<input type="checkbox"/> SOD first draft due 9 pm (10 pts, turnitin.com)
	4/4	ATP and Redox	Section 8.3, 9.1 (<i>Ch. 3 ECB</i>)	GFP – PCR clean & Gel & Restriction Digest, Drosophila III – Clearing the parental generation	pp. 7.22 – 7.25	
12	4/9	No lecture (exam day)		Lecture Exam 2 (100 pts) (includes lab topics of PCR & gel electrophoresis)	pp. 7.26 – 7.29	<input type="checkbox"/> 4/8: Problem set due (10 pts, Canvas)
	4/11	Cellular respiration	Sections 9.2-9.3 (<i>Ch. 13 ECB</i>)	Drosophila IV – F ₁ count & cross Drosophila V – Chromatography I	pp. 8.12 – 8.14 pp. 8.15 – 8.17	

Week	Date	Lecture topic	Lecture reading	Lab topic	Lab reading	Assignments due
13	4/16	Cellular respiration	Sections 9.4-9.6 (Ch. 13, 14 ECB)	GFP – Ligase & Transformation I; GFP project overview (part 2)	pp. 7.30 – 7.32	<input type="checkbox"/> 4/15: Problem set due (10 pts, Canvas) <input type="checkbox"/> 4/15: Homework due: Redox and Energy (5 pts, Canvas)
	4/18	Cellular respiration	Sections 9.4-9.6	GFP – Transformation II Drosophila VI – VII – Chromatography II	pp. 7.33 – 7.35 pp. 8.17 – 8.24	
14	4/23	Photosynthesis	Sections 10.1-10.3 (Ch. 14 ECB)	GFP – Plasmid Miniprep & Restriction Digest Group SOD – Design		<input type="checkbox"/> Quiz: GFP project (10 pts, in lab)
	4/25	Gene regulation	Sections 18.1-18.2 (Ch. 8 ECB)	Drosophila VIII – F ₂ count GFP – Gel Electrophoresis	pp. 8.25 – 8.27 pp. 7.21 – 7.22	<input type="checkbox"/> Lists for Peggy/Beth due at end of lab (Group SOD project) <input type="checkbox"/> SOD final draft due (90 pts, turnitin.com) <input type="checkbox"/> Partner feedback due (2 pts, Canvas)
15	4/30	Gene regulation	Sections 18.2-18.3	Pepperwood Preserve Field Trip		<input type="checkbox"/> 4/29: Problem set due (10 pts, Canvas) <input type="checkbox"/> 4/29: Homework due: Calvin Cycle/CA Cycle (5 pts, Canvas)
	5/2	Development, Cell determination and differentiation	Sections 47.1-47.2, 18.4 (Ch. 20 ECB)	Group SOD – Leaf Inoculation		
16	5/7	Cell determination and differentiation, Stem cells	Section 20.3 (Ch. 20 ECB)	Drosophila IX – Statistics	pp. 8.28 – 8.33	<input type="checkbox"/> 5/6: Homework due: Lac and trp operons (5 pts, Canvas) <input type="checkbox"/> Drosophila problem set due (Canvas, 20 pts)
	5/9	Cell cycle – regulation	Sections 12.2-12.3 (Ch. 18 ECB)	Group SOD – Leaf Analysis		
17	5/14	Cell cycle – cancer	Section 18.5, Vogelstein (2010) (Ch. 20 ECB)	Group SOD – Presentation Prep		<input type="checkbox"/> 5/13: Problem set due (10 pts, Canvas)
	5/16	Catch up / Bioethics Discussion	Materials on Canvas	Group SOD – Presentation (25 pts)		<input type="checkbox"/> 5/20: Group poster PDF due 9 pm (25 pts, Canvas)
Finals Week	5/23 9:00-12:45	Combined: Lecture Exam 3 (100 pts) (includes GFP project and Drosophila project from lab) & Cumulative Final Exam (100 pts) **Bring 2 Scan-trons**				