BIOLOGY 1A: COURSE SYLLABUS **Spring 2018**

Faculty: All faculty are from the Department of Molecular Cell Biology. The faculty will hold office hours (while they are lecturing) as follows:

Jennifer Doudna	Location: Stanley 482 W 1/17: **2–3**, M 1/22: **3–4** F 1/26, F 2/2, M 2/5, F 2/16: **2:30–3:30**	3-0225, 708A Stanley, doudna@berkeley.edu, http://rna.berkeley.edu
Ross Wilson *guest lecturer*	Location: 2084 VLSB F 1/19, W 1/31, F 2/9 W 2/14: **2:30–3:30**	Energy Biosciences Building rosswilson@berkeley.edu
Andrew Dillin	Location: 2084 VLSB M/W 9–10, Th 2–3 PM	4-4951, 403E Li Ka Shing, dillin@berkeley.edu, https://mcb.berkeley.edu/labs/dillin/
Marla Feller	Location: 2084 VLSB M/W 9–10, Th 2–3 PM	3-1726, 195A LSA, mfeller@berkeley.edu https://fellerlab.squarespace.com/

* All office hours will be held in 2084 VLSB unless indicated otherwise. See bCourses for the most up to date listing.

Course Coordinator: Mike Meighan. 2-4110, 2088 VLSB, mailbox in 2084 VLSB (and another one in the hall outside 2088 VLSB), e-mail is {mailto:mmeighan@berkeley.edu}. Scheduled Office hours are M 11-12, W 11:30-12:30 and by appointment. Meighan is available for advice on study habits, techniques, course content, and on matters of scheduling, laboratory operations, exams, etc.. The coordinator will address any administrative or grading issues.

Graduate Student Instructors: The GSI's will instruct discussion. GSI office hours are held in the GSI office, 2084 VLSB GSI. Hours will be posted on bCourses.

LOG ON to the Learning Catalytics url (for most students via Mastering Biology) and enter the session number at the START of lecture. The session number will be written on the chalkboard.

TIME TABLE

Drop deadline is January 26th. Deadline to change grading option is February 16th.

1. Lectures begin January 17th and ends on April 27th. Lectures are held in 1 Pimentel from 8-9 AM. Simulcast will be held in 10 and 60 Evans. Resources such as the syllabus, handouts, etc. will be posted on bCourses. Some handouts are available only online, others are only available for purchase at Copy Central. No note taking service is authorized. The course is available via CalCentral. Neither the quality, nor their availability of course capture is guaranteed.
2. **Email address:** We will routinely email the students about once a week. We will use your berkeley.edu email address you have listed in bCourses. You need to make sure you are receiving messages sent to that address. If you have not received any emails yet, there is a problem with your listed email address. bCourses will be used frequently, check it!
3. **DISCUSSION begins Monday, January 22nd. You must show up to your assigned discussion or you will be dropped.**
4. **LABORATORY.** Lecture begins Monday **January 22nd** and labs begin Tuesday **January 23rd.** The first lab will cover Safety and Equipment. The lab exercise will be available for download on bCourses and in the lab manual. Lab will be held Tuesday through Friday.

5. **Attendance**: You are required to attend the lab AND discussion sections in which you are enrolled (not waitlisted). You may request to reschedule a particular lab, but only in the case of unavoidable direct conflicts. For further information, see the lab syllabus.
6. **Lecture examinations are scheduled for February 21st and March 19th at 8 AM.** There are no make-up exams and NO early exams (except DSP). A handout will be given for each exam.
7. **Final Examination: May 7th at 8 – 11 AM.** Room(s) to be arranged. The final exam will be comprehensive and will cover all lectures. You will receive a handout in lecture regarding specific details about the final (point distribution, weighting, etc.). The exam will **START** at 8 AM. **You must be seated by 7:50 AM**. *WARNING: Late students will not be allowed to start the exam until 8:20 AM. The exam still ends exactly at 11 AM, independent of when the exam starts.*
8. In the case of disruption of an exam (fire alarm, bomb threat, etc.) alternative arrangements have been made. These may include moving the exam to another location, and/or extending the time, and/or arranging an alternative exam date or format (possibly essay).
9. Lab exams are scheduled as follows: **Lab Exam 1: Thursday night February 22nd 9:00-10:00 PM, Lab Exam 2: Thursday March 22st , 8:00-10:00 PM and Lab Exam 3: Friday May 11th from 3-6 PM.** Room(s) to be arranged. These are start times—arrive 10 minutes early. Room(s) to be arranged. There are no make-up lab exams. A handout will be available on-line concerning each exam – room assignments, material covered, etc. There is NO additional final exam for the lab class.
10. Assignments, exams: When papers, etc. are returned it is your responsibility to pick them up. If you do not attend discussion, then you must contact your GSI and get the papers from them, at their convenience. Papers not picked up after 3 weeks may be discarded.

LECTURE MATERIALS:

Required textbook: **Campbell Biology, 11th edition.** The textbook store has a substantial discount on the book. You will NOT need Mastering Biology. We will use Learning Catalytics for "iClicker style" questions during lecture. If the WiFi capacity isn't sufficient then we will use iClicker transmitters.

Required "Learning Catalytics" for Lecture WiFi voting: The Biology 1A lecture will have graded questions during **EACH** lab lecture. "Learning Catalytics" is the software we will use to allow students to vote using WiFi enabled devices (phone, tablet, watch, etc). Learning Catalytics is packaged FREE with the textbook but you register for it from within your registration of Mastering Biology. The course ID for UCBBIOLOGY1ASPRING2018 (no spaces). It is available for purchase separately for $12 for 6 month access (https://learningcatalytics.com/pages/pricing). **NOTE THERE IS A REQUIRED ASSIGNMENT BEFORE THE FIRST CLASS.** In this assignment you will register your SID. In the first assignment you will register your SID. The session number for the first assignment is 50277071.

Required Course Reader(s): The required course reader for the first part of the course will be posted on bCourses and available at Replica Copy, 2140 Oxford. There most likely will not be any reader for the second part. There will be a reader for the third part of the course that will be posted on bCourses and available at Replica Copy

Exam Reader: An exam reader with previous exams is available at Replica Copy.

GRADING PROCEDURE: Grades will be determined numerically as follows:

Learning Catalytics (lecture questions) Points (3 X 12)	36 pt's.
Midterm Examinations (2 x 100)	200 pt's.

Final (67 for Dr. Doudna, 67 for Dr. Dillin, 166 for Dr. Feller	300 pt's.
Total:	536 pt's.

Changes affecting the point distribution, the reading schedule, or other aspects of the syllabus may occur during the semester. We will inform you of any changes.

Letter grades are based upon the points that you **EARN** (not based upon needs or wants). They are guaranteed as follows.

A (some form of an A)	100-90%	D (some form of a D)	69-60%
B (some form of a B)	89-80%	F	59-00%
C (some form of a C)	79-70%		

However, in the event that some examinations have been unusually difficult, the cut offs for letter grades may be lowered (but only by a few percentage points, and as deemed necessary). Historically around 40-50% of the class **EARN** A's and B's.

I GRADES: In keeping with University regulations, the grade of "incomplete" is assigned to a student only if (1) the student has completed at least one-half of the material with a passing grade of C or better and (2) the student presents documented medical evidence of inability to complete the course on schedule. The student assigned an I grade in Biology 1A must complete the work before the first day of classes in the Spring Semester of 2019, without including the course for units on the study list, or the I lapses to an F.

CHEATING: The rare student found cheating in the course will be reported to the University for review for dismissal. An automatic 0 will be given on that assignment. Cheating is not tolerated. This includes ALL work—including pre-labs!

RECOMMENDATIONS: It is probably better for you to obtain letters from upper division classes, in the future, but we are willing to write letters. Your GSI will write an initial draft of the letter (they know you the best). This letter will be modified by a faculty member or the course coordinator.

HOW TO DO WELL

1. Come to lectures and take notes. Make sure you review them.
2. Keep up with the material. It is essential that you do not fall behind. Seek help if needed.
3. Clarify topics you do not understand by
   a. Coming to faculty office hours and ask questions.
   b. Coming to GSI office hours and ask questions.
   c. Getting into a study group.
   d. Reading the book.
   e. Using email to ask the faculty questions.
4. Use the exam reader, making sure you understand the reasoning behind the answers.
5. Come to the exam review sessions and ask questions.
6. Come to discussion with questions.

BIOLOGY 1A STUDY RESOURCES

The following is a partial list. Please take advantage of these resources. Additional opportunities such as faculty & graduate student reviews may also occur during the semester. Further information is available in the lab manual and in the exam reader.

Faculty Office Hr's: Office hours are typically held in 2084 VLSB. Faculty will announce office hours and any changes to them.

Academic Coordinator Office Hr's (2088 VLSB)**:** Refer to bCourses for up to date hours.

Graduate Student Instructors Office Hr's (2084 VLSB): Refer to bCourses for up to date hours.

Student Learning Center (SLC, 189 Chavez Student Center): The SLC offers student-led study groups and tutoring. Study groups require registration which can be done on SLC's webpage **(slc.berkeley.edu**). Tutoring is generally available MTWTh 9-4 and F 9-12. See the SLC's webpage for more information. **Note:** None of the SLC's services are a substitute for lecture, discussion, reading the text, or attending Bio 1A office hours. However, they are an excellent way to get additional assistance and feedback from trained undergraduate tutors who want to assist you in meeting your academic goals.

STUDY GROUPS: These are a great way to learn the material. I encourage you to form study groups, either within your lab or with other students.

Tutor Services (fee): Formal tutoring (variable fees) from individuals may be available as the semester progresses. Contact Mike.

Safe, Supportive, and Inclusive Environment

Whenever a faculty member, staff member, post-doc, or GSI is responsible for the supervision of a student, a personal relationship between them of a romantic or sexual nature, even if consensual, is against university policy. Any such relationship jeopardizes the integrity of the educational process.

Although faculty and staff can act as excellent resources for students, you should be aware that they are required to report any violations of this campus policy. If you wish to have a confidential discussion on matters related to this policy, you may contact the Confidential Care Advocates on campus for support related to counseling or sensitive issues. Appointments can be made by calling (510) 642-1988.

The classroom, lab, and work place should be safe and inclusive environments for everyone. The Office for the Prevention of Harassment and Discrimination (OPHD) is responsible for ensuring the University provides an environment for faculty, staff and students that is free from discrimination and harassment on the basis of categories including race, color, national origin, age, sex, gender, gender identity, and sexual orientation. Questions or concerns? Call (510) 643-7985, email ask_ophd@berkeley.edu, or go to http://survivorsupport.berkeley.edu/.

Schedule of Classes

Section	Disc. Time	Disc. Room		Section	Disc. Time	Disc. Room
101	M 11:00A-11:59A	B56 Hildebrand		116	M 3:00P-3:59P	2038 VLSB
102	M 11:00A-11:59A	245 Hearst Gym		117	M 4:00P-4:59P	250 Dwinelle
103	M 11:00A-11:59A	136 Barrows		118	M 4:00P-4:59P	247 Dwinelle
104	M 11:00A-11:59A	3105 Etcheverry		201	Tu 8:00A-8:59A	106 Wheeler
105	M 12:00P-12:59P	109 Dwinelle		202	Tu 8:00A-8:59A	321 Haviland
106	M 12:00P-12:59P	245 Hearst Gym		203	Tu 11:00A-11:59A	242 Hearst Gym
107	M 12:00P-12:59P	321 Haviland		204	Tu 1:00P-1:59P	136 Barrows
108	M 1:00P-1:59P	30 Wheeler		205	Tu 1:00P-1:59P	B1 Hearst Field Annex
109	M 1:00P-1:59P	24 Wheeler		206	Tu 1:00P-1:59P	106 Wheeler
110	M 1:00P-1:59P	321 Haviland		207	Tu 2:00P-2:59P	224 Wheeler
111	M 2:00P-2:59P	2038 VLSB		208	Tu 2:00P-2:59P	245 Hearst Gym
112	M 2:00P-2:59P	2032 VLSB		209	Tu 2:00P-2:59P	242 Hearst Gym
113	M 2:00P-2:59P	2030 VLSB		210	Tu 3:00P-3:59P	87 Dwinelle
114	M 3:00P-3:59P	2066 VLSB		211	Tu 4:00P-4:59P	259 Dwinelle
115	M 3:00P-3:59P	2062 VLSB		212	Tu 4:00P-4:59P	283 Dwinelle

Biology 1A Calendar, Spring 2018

Lectures 1, 3-5, 8- 10 given by Professor Doudna. Lectures 2, 6, 7, 11-13 given by Dr. Ross Wilson. Lectures 14-26: Professor Dillin (25 given by Dr. Dirk Hockemeyer, 26 given by Dr. Fyodor Urnov), Lectures 27-38: Professor Feller. All readings are from the 11th edition of Campbell Biology by Reece et al.

Date	***Lect #***	***Lecture Topic***	***Reading***	***Bio 1AL Lab, Discussion***
Jan 17	1	Course introduction. Introduction to macromolecules. Protein structure & function	Ch. 1-3	No lab.
Jan 19	2 (RW)	Structure and function: lipids, carbohydrates and nucleic acids	Ch. 4-5	
Jan 22	3	Cell structure and organization -#1	Ch. 6	1: Safety and Equipment.
Jan 24	4	Cell structure and organization -#2	Ch. 6	
Jan 26	5	The structure of biological membranes	Ch. 7	
		*Deadline to drop = January 26th.		
Jan 29	6 (RW)	Cellular metabolism and biological catalysts	Ch. 8	2: Cells.
Jan 31	7 (RW)	Enzyme function	Ch. 8	
Feb 2	8	Regulation of enzymatic activity	Ch. 8	
Feb 5	9	Introduction to bioenergetics	Ch. 8	3: Enzymes, *Vibrio* isolation.
Feb 7	10	Cellular energy production – aerobic processes	Ch. 9	
Feb 9	11 (RW)	Cellular energy production – anaerobic processes	Ch. 9	
Feb 12	12 (RW)	Photosynthesis-the light reactions	Ch. 10	4: Photosynthesis, *Vibrio* isolation.
Feb 14	13 (RW)	Photosynthesis-CO_2 fixation and related processes	Ch. 10	
Feb 16*	14	Microbial Genetics and Evolution-Chromosomes, Plasmids, and Phage	Ch 19, Ch 27.1, 27.2	
		Feb 16 Deadline to add, change P/NP to letter grad		
Feb 19		HOLIDAY		No lab lecture. No lab.
Feb 21		**MIDTERM 1 Date: Lectures 1-13. Rooms to be arranged.**	See handout.	**(Th Febraury 22) Lab exam at 9:00-10:00 PM.**
Feb. 23	15	DNA Replication and the PCR.	Ch. 16, 418-419	
Feb 26	16	Cell Cycle, Mitosis and Reproduction of Cells	Ch. 12	5: Complementation I, PCR and GMB I.
Feb 28	17	Chromosomes, Checkpoints and Cancer	Ch. 15, 18.5	
March 2	18	Meiosis and Sexual Life Cycle	Ch. 13	
March 5	19	Gregor Mendel and the Foundation of Genetics	Ch. 14	6: Complementation II, PCR an And GMB II.
March 7	20	Recombination, Linkage and Mapping	Ch. 15	
March 9	21	Transcription	Ch. 17.1-3,	

CONTINUED

Date	Lect	Lecture Topic	Reading	Bio 1AL Lab, Discussion
March 12	22	The Genetic Code and Translation	Ch. 17.4-5	7: Complementation III and Bioinformatics.
March 14	23	Prokaryotic Gene Regulation	Ch 18.1-2	
March 16	24	Eukaryotic Gene Expression and Regulation	Ch 18.3 – 18.4	
March 19		**MIDTERM 2: Lectures 14-24. Rooms to be arranged.**	See handout.	**Lab exam 2 Review**
March 21	25	Organismal Cloning and Stem Cells (Guest Lecturer Dirk Hockemeyer)	Ch 20.3	**(Th March 22) Lab exam 2 at 8:00-10:00 PM.**
March 23	26	Genome Editing (Guest Lecturer Fyodor Urnov)	Ch 20.1-2, 20.4	
		* March 23 grading deadline (P/NP). See an advis		
March 26		SPRING BREAK!		
April 2	27	Cell signaling	Ch. 11	8: Rat Anatomy.
April 4	28	Development 1	Ch. 20.3	
April 6	29	Development 2	Ch. 21.6, 47.1-3	
April 9	30	Animal form and function	Ch. 40.1-3	9: Sensory input and genetic variation.
April 11	31	Animal nutrition	Ch. 41.1, 41.2 first subsection, 41.3, 4	
April 13	32	Circulation and respiration	Ch. 42.1-3, 42.5, 940-947	
April 16	33	Osmoregulation and excretion	Ch. 44.1- 44.4.	10: Development.
April 18	34	Hormones and the endocrine system	Pp 997-1012	
April 20	35	The immune system	Pp. 950-958, 960-966	
April 23	36	The Neurons, synapse, signaling	Ch. 48.1-3	11: Physiological response to exercise
April 25	37	The nervous system	Ch. 49.1, 50.5	
April 27	38	Sensory and motor mechanisms	Ch. 50.1, 50.3	
		RRR week		
May 7		**Biology 1A FINAL EXAM 8-11 AM.**	See handout.	
May 11				**Bio 1AL Final 3-6 PM**

Look at the final exam handout carefully for your assigned seating within a section. It is critical that you take your place quickly since there is only 30 minutes between exams and there will be assigned seating. YOU MUST BE SEATED BY 7:50 AM. We will begin at 8 AM, not 8:10 AM. We must end at 11 AM.