

Fundamental Concepts of Modern Biology

BILD 10

Summer 2017

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office hours: Wed 2:15-3:15 in HSS 1145L

Please present your questions about course material in person during office hours, not by email. I cannot guarantee an answer to your email, unless it is an urgent issue.

Course description

An introduction to the biochemistry and genetics of cells and organisms; illustrations are drawn from microbiology and human biology. This course is designed for non-biology students and does not satisfy a lower-division requirement for any biology major. Open to nonbiology majors only.

Textbook

Biology – Science for Life, 5th edition, (2016) by Belk and Maier

Textbook reading is required in this course. Homework assignments will assess your understanding of the reading. Further, reading prior to lecture will provide a foundation for discussion and activities in lecture. It will be difficult to pass the course without doing the reading. There will be copies of the textbook on reserve at the Library.

We will also be using an online program, called “Mastering Biology.” There are frequent homework assignments online each week; some are already posted. You may purchase the Mastering Biology Access Code & Loose Leaf version of the printed text at the UCSD Bookstore. Alternatively, you may purchase online access to Mastering Biology plus the eTextbook directly through the publisher for \$95.95. Registration/ordering instructions are found on TED.

Podcast

This course will be podcast.

Web site

The class web site will be on TED.

IA office hours

IA	Day/Time	Location
Laura Millard	Mon, 12:30-1:20	2nd floor of Geisel, near Audrey's cafe
Sahar Zargar	Thurs, 10-11 AM	Art of Espresso (near Mandeville)

You may attend the office hours of either IA. *There will not be IA office hours the first week.*

Discussion sections

Each section meets twice per week. In section you may review the lecture material and/or discuss the readings. There will also be practice problems to assess your understanding of the material.

Sections will begin on Thurs, Aug 10.

Section	Day/Time	Location	TA	email
A01	TuTh 1-2 PM	CSB 005	Sahar Zargar	szargar@ucsd.edu
A02	TuTh 2-3 PM	CSB 005	Sahar Zargar	szargar@ucsd.edu
A03	TuTh 3-4 PM	CSB 005	Laura Millard	lmillard@ucsd.edu

Films

There will be four required films. They will not be shown in lecture or section, but are available for viewing online, streaming from the publisher's web site or from UCSD library reserves. See the course web site for links. When using UCSD library reserves, you *must* access the films from within the UDSN protected network or use a VPN if you are off campus.

Supplements and Safety (2016)

<http://www.pbs.org/video/2365646371/>

An investigation into the hidden dangers of vitamins and supplements, a multibillion-dollar industry with limited FDA oversight. FRONTLINE, The New York Times and the Canadian Broadcasting Corporation examine the marketing and regulation of supplements, and cases of contamination and serious health problems.

This film (1 hour) will be covered on midterm 1.

Hunting the Nightmare Bacteria (2013)

<http://www.pbs.org/wgbh/frontline/film/hunting-the-nightmare-bacteria/>

Has the age of antibiotics come to an end? From a young girl thrust onto life support in Arizona to an uncontrollable outbreak at one of the nation's most prestigious hospitals, FRONTLINE investigates the alarming rise of a deadly type of bacteria that our modern antibiotics can't stop.

This film (1 hour) will be covered on midterm 2.

The Vaccine War (2010)

<http://www.pbs.org/wgbh/frontline/film/vaccines/>

Public health scientists and clinicians tout vaccines as one of the greatest achievements of modern medicine. But for many ordinary Americans vaccines have become controversial. In communities like Ashland, Oregon, up to one-third of parents are choosing not to vaccinate their kids at all. This is the vaccine war: On one side sits scientific medicine and the public health establishment; on the other a populist coalition of parents, celebrities, politicians and activists.

This video (1 hour) will be covered on midterm 3.

Harvest of Fear (2001)

available through UCSD library digital reserves

Frontline and Nova explore the intensifying debate over genetically-modified (gm) food crops. Interviewing scientists, farmers, biotech and food industry representatives, government regulators, and critics of biotechnology, this two-hour report presents both sides of the debate, exploring the risks and benefits, the hopes and fears, of this new technology.

This film (2 hour) will be covered on the final exam.

How to study the films: The midterms and final exam will test you on material from the films. You should take notes when you watch them, and review your notes before the exams. Do NOT worry about exact dates, numbers or statistics in the films. Instead, focus on the stories, history (major events and general time frame), arguments of different stake-holders, policy issues, causes of controversies, impact of the situations described on individuals and society, appropriate and inappropriate responses, biological bases for understanding the situations, etc. For each part, or chapter, of the film you should be able to say something intelligent about what the message was.

Exams

Exams and quizzes will be closed-notes/closed-book, primarily short answer with a few true/false, multiple choice, and short essay questions. You will be accountable for **all material covered in lecture, PowerPoint slides, assigned material in Mastering Biology, and all required reading.**

There will also be exam questions pertaining to the **required films.**

The final exam will be comprehensive, with emphasis on the last part of the course. The final exam will not cover films from the midterms.

BRING STUDENT ID. It will be checked at the exam.

You must write in nonerasable pen and avoid using white-out on the midterm in order to be considered for a regrade. Your handwriting must be legible; we will disregard answers which cannot be deciphered.

Old exams from my last quarter teaching BILD 10 are posted on the course web site. Note that they are very old! We are now using a different textbook and films, the material may not be exactly the same or covered in the same order, and the exam length differs. Use these to become familiar with my style of exams, but don't assume the material is exactly the same.

Review sheets will be posted on the web site shortly before each exam, and the IAs will conduct a **review session** before each exam:

1 st review sessions	Sunday, August 13th, 7:30-8:50pm, Center Hall 222
2 nd review session	Sunday, August 20th, 7:30-8:50pm, Center Hall 222
3 rd review session	Sunday, August 27th, 7:30-8:50pm, Center Hall 222
Final review session	Thursday, Sept 7th, 7:30-8:50pm, Center Hall 222

Graded midterms will be available in the hallway of HSS 1145 (if you sign the waiver). Note that the external doors are locked after business hours. Graded final exams may be viewed by appointment with Dr. Gus, but may not be taken home.

Missed exams

There are NO alternate exams. Make sure your class schedule has NO exam conflicts, including the final exam! If you know in advance must miss an exam due to an unavoidable situation (e.g. surgery), it is your responsibility to clear it with Dr. Gus as soon as the conflict becomes apparent. If a spontaneous emergency (e.g. serious illness or accident) arises, you **must contact the instructor within 24 hours** of the missed exam to determine if you are eligible for a make-up exam. You will be required to provide documentation, without which there will not be a make-up, and you will receive a zero for that exam. Do not ask to reschedule an exam for any reason other than a *dire emergency*. Make-up exams are decided case-by-case. The format *may* be an oral or essay exam.

iClickers

You may start earning points by answering iClicker questions on **Tues, Aug 8**, in lecture. Your iClicker **MUST** be registered on TED in order for your responses to be assigned to you.

Points available:

45 points for participation
15 points for accurate answers
60 points total = 6% of your grade.

iClicker Participation Points (45 points)

In order to receive these points each day, you must respond to 80% of the questions in that lecture. It does NOT matter if your answer is correct.

There are different numbers of questions each day, so you may use the table below to determine how many times you must respond for participation credit a given day.

total questions	7	6	5	4	3	2	1
required responses	6	5	4	4	3	2	1

Q. How many days will we have clicker questions?

Probably ~17 days.

Q. How do I get the participation points each day?

You must answer 80% of the questions posed that day. The number of questions will vary from lecture to lecture.

Q. How many days will I have to be present to qualify for full participation points?

You get two free absences without penalty. Full credit will be allocated if you click in every day except two.

Q. If my battery fails, or I forget my clicker, but I do attend the class, do I get participation for that day?

No. You are allowed 2 “free” absences – so you don’t have to ask me about making up the missed days. We don’t have to negotiate credit; you can still get all 45 participation points from the remaining days attended.

Q. If I only attend a few lectures, will I get any participation points?

Yes, you can still get points each day if you answer 80% of the questions that day.

iClicker Accuracy Points (15 points)

You may receive additional credit for answering questions correctly.

There are different numbers of questions during each lecture. Every question is graded individually, even if it is a repeated question (e.g. asked before and after group discussion). The total number of questions over the quarter is unpredictable, and will only be known when the quarter ends.

If you correctly answer 70% of the total questions in a quarter, you will receive the full 15 points possible for accuracy.

Here is a hypothetical example: IF there are 100 questions total in a quarter, you must answer 70 questions correctly to receive the maximum credit of 15 points. In that case, you will receive $15 \text{ pt}/70 \text{ Q} = 0.214$ points per question up to a maximum of 15 points.

This is NOT all or nothing. You get credit for as many as you answer correctly, up to 15 points.

Q. If my battery fails, or I forget my clicker, but I do attend the class, do I get accuracy points for that day?

No. You only need to get 70% of the total questions correct in order to get full credit. Please do not ask about making up missed days. We don't have to negotiate credit; you can still get all 15 points from the remaining days attended.

Additional iClicker information

Q. What kind of clicker should I buy and where can I get it?

The iClicker, preferably version 2, although the regular iClicker works too. You can get one at the UCSD bookstore.

Q. Can I share a clicker with another student?

No! If you are found to be using another student's clicker, or if another student is using your clicker, you will both receive a failing grade in the class, and will be referred to the Office of Academic Integrity for administrative discipline.

Q. Will the clicker results be posted on TED?

No. You may keep track of your own results each day. The clicker questions are posted at the end of each day on TED, with the lecture slides. The answers to the questions are revealed in class.

Q. What is my best strategy for getting all the points?

Do your reading in advance, show up for as many lectures as possible, stay awake, and PARTICIPATE!

Course grade

This course will be graded on a curve. The class mean will be at the B-/C+ boundary.

iClickers	6%	Midterm 2	16%
Homework	12%	Midterm 3	16%
Midterm 1	14%	Final exam	36%

Academic integrity

Students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity. Cheating will not be tolerated, and I may fail any student caught engaging in academic dishonesty. All exams will be closed-book and closed-notes, so all personal materials must be stowed under your seat. Only exams written in nonerasable pen will be considered for regrades. Exams will be photocopied for comparison with submitted regrades. Because all exams are required for satisfactory completion of this course, any student caught cheating on an exam/quiz may receive a failing grade for the course. He/she may also be suspended from UCSD.

How can I succeed in BICD 136?

1. **Read** the assigned pages before lecture. You will understand the lectures better and learn more. You will also get more clicker points toward your grade! The lecture will be related to the assigned reading, but may expand on the topic. Nevertheless, you are accountable for all reading. It will be covered on the exams.

Keep up with the reading. Pace yourself with the reading schedule. If you bump into material that is too technically challenging, *don't get bogged down*. Skip it (temporarily). Return to the most difficult material later.

2. **Outline** the important points as you read. This will help you remember the flow of information and contextualize the details. You will not remember all the reading unless you take notes. Use index cards, or a notebook, to summarize the important points.

3. **Look up words** you don't understand in the glossary, a dictionary, or online.

4. **Come** to class and sit toward the front.

5. **Listen** to the podcast.

6. **Review** your notes within 24 hours of the lecture.

Even more effective: rewrite (outline) your notes within 24 hour of the lecture.

There will be material presented in lecture that is not in the textbook. You are accountable for all lecture material.

7. **Review** the PowerPoint slides with your lecture notes. PowerPoint slides will NOT contain the instructor's notes. They will contain announcements, illustrations, graphs, diagrams, and photos which augment the lecture. They will be posted after each lecture. You are accountable for everything in the PowerPoint slides.

8. **Study** a little bit every day, or a few times per week. Repetition over time is the key to retaining information. Your goal is to establish new neural pathways in your memory and fire them often! Cramming does not accomplish this.

9. **Study** with other students, and choose those who are serious about academics. Make up questions and quiz each other. Anticipate potential exam questions. This is a strategy that has been demonstrated to increase student learning.

10. **Take notes** during the films. If you have time, you may watch a film twice!

11. **Go** to your discussion section. There will be opportunities to review the material and ask questions. There will also be practice exam questions, so you can assess your progress.

12. **Go** to the office hours of the IAs and the instructor. This will encourage you to review the material, in order to have questions to discuss.

13. **Go** to the review sessions.

14. Utilize **study aids** provided on the course web site and through Mastering Biology.

15. If you are having personal difficulties, do not hesitate to seek help at Counseling and Psychological Services (which is free to students). They can help you get over many types of hurdles. <http://caps.ucsd.edu/>

Their self-help library of resources covers many relevant topics, and can be accessed at <http://caps.ucsd.edu/selfhelp.html>

Tentative Class Schedule

Date	Session	Topics	Required reading	pages
Mon, Aug 7	1	Introduction How is science done?	pg 3 - top paragraph of pg 8	5.5
Tues, Aug 8	2	How is science done?	pg 8 - 20	13
Wed, Aug 9	3	How is science done?	pg 21-26	6
Thurs, Aug 10	4	What is Alive? Biological molecules	pg 31-32, last paragraph on 35, first 2 paragraphs on 36, 39 through first paragraph on 44	8.5
Mon, Aug 14	5	MIDTERM 1 (40 min) Nutrients	51-58	8
Tues, Aug 15	6	Cell structure	pg 44-46, pg 59-62	6.5
Wed, Aug 16	7	Membrane transport	pg 63-67	5
Thurs, Aug 17	8	Enzymes & metabolism	pg 71 to first paragraph of 76	5
Mon, Aug 21	9	MIDTERM 2 (45 min) Cellular respiration	pg 76-83	7
Tues, Aug 22	10	Photosynthesis	pg 93-97 (minus last paragraph)	5
Wed, Aug 23	11	Cancer, DNA and mitosis	pg 107- first paragraph of 118	11.5
Thurs, Aug 24	12	Cancer, Meiosis	pg 118-128	11
Mon, Aug 28	13	MIDTERM 3 (45 min) Genetics	pg 133 - top half of 140	7.5
Tues, Aug 29	14	Genetics	pg 140- top half of 146	6.5
Wed, Aug 30	15	Genetics	146-154	8.5
Thurs, Aug 31	16	Genetics, sex determination	pg 159 to first paragraph of 166	7.5
Tues, Sept 5	17	Pedigrees, DNA profiling	pg 166-173	8
Wed, Sept 6	18	Gene expression	pg 177 to 2nd paragraph of 187	10.5
Thurs, Sept 7	19	Biotechnology, cloning	pg 187-196	10
Fri, Sept 8	--	FINAL EXAM (11:30A – 2:30PM)		

Readings in *Biology – Science for Life*, 5th edition, (2016) by Belk and Maier

On average there are ~8 pages of reading per lecture,
~30 pages of reading per week