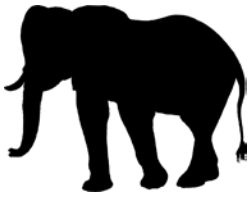
Development & Physiology of Organisms (BIOE 20B)
SUMMER 2020

Welcome

SPECIAL NOTE:

We are all experiencing a challenging and unprecedented moment in our history. Both the pandemic and the long overdue awakening for many to the racial injustices long present in our country are emotionally, physically, socially, and mentally difficult for all of us but especially for our peers and colleagues of color. Each of us is experiencing this moment in our own ways – often with our emotions and situations changing moment by moment. As your teaching team, we recognize this, and as your instructor, I have done my best to design this course around the principles of flexibility and compassion while still offering a rigorous learning opportunity to further your careers in biology. More than ever, this learning experience will depend on our shared commitment to each other to make space for ourselves and our colleagues to engage with each other and with the material. Learning science tells us that learning is best done in a social context yet, we are all in different spaces and may engage with the course at different times. This means that we need to have intention in how we create community and engage with each other. I will be pointing out the ways in which you can participate in the course that work best for your comfort level and your literal and figurative bandwidth.

I also want to note that this is new for all of us. As an instructor, I was asked to convert my spring course into a remote format in a week. As students, you were asked to wrap up your life in Santa Cruz and begin taking courses online – also in a week. While we have had the benefit of some experience, we are all still novices in this format of teaching and learning. I am learning a great deal from the feedback of my students and as we go, my virtual door is always open to feedback so I can understand how you are experiencing the course and what might make it better.

Although this is a challenging moment in time, I am confident we can make this course a great learning experience for all of us and support each other through our shared passion for biology and the living world. I am eager to meet you and strongly encourage you to come to office hours and check in with me about whatever is on your mind.

Best,

Dr. D, Carla, and Emily

Stay Connected

Teaching Team	**EMAIL**
Instructor	
Dr. Robin Dunkin	rdunkin@ucsc.edu
Teaching Assistants	
Carla Sette	cmsette@ucsc.edu
Emily Nazario	enazario@ucsc.edu

COURSE WEBSITE

On canvas

&

Piazza

piazza.com/ucsc/summer2020/bioe20bsummer20

Class Times (READ CAREFULLY)

This course is designed to be a hybrid course meaning most of the work can be completed asynchronously but there is a synchronous requirement as well. You are required to attend one synchronous session each week and beyond that you can select how many others you attend. You can also choose which synchronous session you attend and it can vary week by week according to your needs. *Note that these sessions will track your attendance and each week you need to attend at least one session to get credit.* The options for synchronous attendance are as follows:

Day	Time	Instructor	Description
T &TH	9-10am	Dr. D	Each session will include lecture and problem-solving help; we will work on homework problems or content related to homework
T & TH	10:30-11:30am	Emily	Section with the TA (see plan on course schedule below)
T &TH	5:30-6:30pm	Carla	Section with the TA (see plan on course schedule below)
W	9-10am	Emily	Section with the TA (see plan on course schedule below)
W	5:30-6:30pm	Carla	Section with the TA (see plan on course schedule below)
TH	11:15-12:15pm	Dr. D	Student Hours, informal discussion and small group help

The Basics

COURSE DESCRIPTION:

This course will cover structure and function of plants and animals from the cellular to the organismal level including anatomy, physiology, and development.

REQUIRED TEXT:

Life – The Science of Biology 11th Edition (Sadava et al). You can use the older editions (check the equivalency table at the end of this syllabus. There is an ebook edition available as well.

DRC STUDENTS:

WELCOME! Please be sure to introduce yourselves to the instructor via email or private chat during an online lecture in the first week of class and let me know how I may facilitate your learning experience. In the remote

learning environment we will need to address things a little differently. The Disability Resources Center reduces barriers to inclusion and full participation for students with disabilities by providing support to individually determine reasonable academic accommodations. Operations continue via remote appointments. If you have questions or concerns about exam accommodations or any other disability-related matter, email the DRC Schedulers at drc@ucsc.edu for an appointment.

MAJOR QUALIFICATION

This course is required to declare one or more of the majors in the Division of Physical & Biological Sciences. Your performance in this course may determine your eligibility for a science or math major. For more information on major qualification, please go to: https://undergrad.pbsci.ucsc.edu/eeb/index.html

Frequently Asked Questions

AM I REQUIRED TO ATTEND CLASS?

The majority of this course can be done asynchronously. You are required to attend at least one synchronous session per week (see above), however, which of these sessions will be up to you. Multiple sessions will be offered and depending on what you need, you can select the type of session that will work best for you. Two sessions per week will be offered by the instructor – Dr. D – and will include some review of material in a lecture format as well as some problem-solving time to work on homework together. These sessions will be recorded and posted each week. There will also be multiple "section style" sessions offered by the TAs each week. You can attend one of these instead or in addition to the sessions offered by the instructor. Attendance will be counted at all of these sessions and to get credit, you will need to attend at least one per week. ***NOTE – this policy is aimed at helping the teaching team stay in touch with each student and providing students with a place to interact with peers and a reliable time each week to test their learning and ask for help.***

HOW DO I PARTICIPATE IN CLASS?

There are multiple ways for you to participate depending on your comfort level and situation. These include speaking up or chatting during class or section, contributing to the discussion board on Canvas, "attending" office hours, and completing participation assignments when they come up. Participation is especially valued in this remote learning environment and we all have to work harder to participate in the community of the course.

WHAT WILL CLASS BE LIKE?

This course is designed such that you can get most of the content asynchronously and our synchronous time will be spent doing some summary of big or tricky ideas as well as working through problems and questions. We will be doing group work during class time.

WHAT WILL SECTION BE LIKE?

Section time will be structured time to work on specific content and skill exercises with your peers, a TA, and a learning assistant. You can attend ANY section that you wish. Attendance at section (any section) is required. If for some reason this doesn't work for your situation, please email Dr. D.

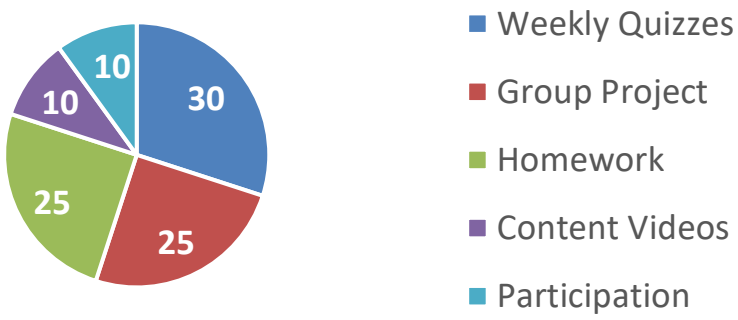
HOW WILL I BE ASSESSED ON WHAT I HAVE LEARNED?

You will be asked to do weekly quizzes, homework, and various participation exercises. There will also be a group project.

HOW SHOULD I ENGAGE WITH THE COURSE OUTSIDE OF CLASS TIME?

You should be working through the assigned work in the modules prior to class if indicated and spending about 2-3 hours a day working on this class. You should think about this class in terms of what you need to get done each week. All assignments will be due at the same time, Sunday night at midnight. You should plan to work on weekly assignments to meet this deadline.

HOW WILL MY GRADE BE DETERMINED?



WHAT DOES IT MEAN TO HAVE ACADEMIC INTEGRITY? WHY IS IT IMPORTANT?

Academic integrity means conducting yourself in a way that is consistent with the academic code of conduct of UCSC. More importantly, it means conducting yourself in such a way that you are engaging in the course and with the other members of our community with respect for learning. As in life, taking short cuts may lead to short term gains but almost certainly will lead to long term problems. Cheating on weekly quizzes or copying assignments means you will not really learn the material and end up being unprepared going forward. Most people do not come to college to just get by – rather – we come to college to deeply learn and improve ourselves intellectually. Of course, in doing so we also improve our chances of securing a well-paying job that we are passionate about.

WHAT KINDS OF THINGS I AM ALLOWED TO DO WHEN TAKING WEEKLY QUIZZES, HOMEWORK?

The weekly quizzes and the group project will be the biggest assessments in this course and will take the place of a normal midterm and final exam. For weekly assignments, you are allowed to consult your notes and textbook as well as online sources, though all assessments will be doable without online sources. You are NOT permitted to consult with peers for these particular assignments. For homework, reading or copying keys from old homework that may be available is considered to be inconsistent with the academic integrity policy above.

I HAVE A PROBLEM WITH THE COURSE – WHO SHOULD I ASK?

You should check the syllabus and canvas site then, ask a peer, a TA, the discussion board on canvas, or email Dr. D. If something comes up for you PLEASE email Dr. D so we can work out a solution together.

Other Important Information

LOGISTICS

Please refer to Canvas for all class instructions and assignments. I will be sending weekly emails with upcoming due dates. Generally, work will be due by Sunday but there may be exceptions. The syllabus is subject to change. Work is all due on canvas by the due date.

LATE WORK POLICY

For this quarter, all deadlines will have a 24hour grace period. If you can't complete something or you just plain forget, email your TA ASAP to discuss a plan. After 24 hours, late assignments will be docked 5% per day for up to 1 week. After the week, the assignment will be closed. If you find yourself missing this one-week deadline, please email Dr. D and cc your TA. Considerations for acceptance of late work past the one-week open period, will be made case by case.

ACTIVE LEARNING

This class values your participation. In both class and section we will facilitate your learning by incorporating opportunities for you to actively engage with the material. *Scientific data shows that people learn more effectively when they take an active role in their learning even in class!*

Passive learning strategies include: reading book or lecture notes, watching video recordings, making flash cards, making vocabulary lists, rewriting your notes in different color inks. These are all good but are NOT good enough to help you keep an A in this course.

***Active learning strategies include*:** drawing and labeling diagrams, standing at a whiteboard and walking someone else through a concept, asking "what if" questions in which you challenge your understanding of material by asking what would happen if I perturb the system in a particular way (thought questions in class are examples), asking experimental design questions and challenging yourself to understand how an experiment answers a particular question, asking new scientific questions, making up sample quizzes for yourself and exchanging them with a friend, teaching the material to your peers, friends, family, or pet!

OFFICE HOURS

Students are **enthusiastically** encouraged to attend the office hours of your instructor and TA. You are welcome to come with specific questions or to just "talk biology". We will not respond to requests for notes or "what is going to be on the exam." Dr. Dunkin's OH are generally group question and answer periods. If you have a private question/issue to discuss, please contact me ahead of time to make an appointment.

IF YOU ARE TAKING THIS COURSE AGAIN

Please check in with the instructor in OH so we can figure out a strategy for you to be successful the second time through.

THIS COURSE IS BEING RECORDED AND WILL NOT BE CIRCULATED BEYOND OUR UCSC COMMUNITY.

Important Summer Session Remote 2020 Deadlines:

Session 2:
Drop: Monday, August 3
Request for "W": Friday, August 14

Summer is unique. **You will not be dropped for non-attendance or non-payment.** You must drop yourself. Dropping before the deadline results in a full-tuition reversal/refund. Withdraw posts a W for the grade and full tuition is charged (no refund).

For all dates and deadlines, including 'change of grade option' (P/NP) and grades due, here is the summer academic calendar: https://summer.ucsc.edu/studentlife/index.html

For questions about dropping, requesting a W grade for a course, or withdrawing from the summer quarter, email summer@ucsc.edu.

MAIN LEARNING OBJECTIVES

1) Students should be able to *describe* the principles and *explain* the physiological functions of the core mammalian organ systems including energy balance, digestion, osmoregulation, circulation and respiration, and the nervous system.

2) Students should be able to *describe* the idea of differential gene expression (DGE) and *provide multiple examples* as well as *illustrate and explain* the key developmental mechanisms that lead to DGE during early development.

3) Students should be able to *describe* the key patterns of cell division and important developmental phases in a variety of animal species.

4) Students should be able to *summarize and illustrate* the key physiological structures and mechanisms in plants for water and sugar transport, growth, photosynthesis, and reproduction. They should also be able to *identify* key concepts of plant nutrition.

5) Students should be able to accurately *predict* symptoms, outcomes, or potential outcomes provided a physiological perturbation (disease, drug, environmental change) for any of the animal, plant, or developmental systems covered.

6) Students should be able to read and *interpret* graphical data or *construct* an accurate graph provided numerical or written data about the core physiological concepts that are covered in the course.

7) Students should be able to read and *translate* into plain language (no jargon) a passage or abstract from a scientific paper.

8) Students should be able to *name and describe* in one or two sentences the work of 4-5 contemporary scientists in the fields of animal or plant physiology or developmental biology.

9) Students should be able to *understand* the benefits and opportunities that participating in scientific research as an undergraduate can provide.

ALL ASSIGNMENTS & QUIZZES ARE TURNED IN VIA CANVAS

Week	Date	Topic	Read Watch	Major Individual Assignments *All assignments are due on Sunday at 11:59pm unless otherwise stated*	Group Project Work	Section Activity
Week 1	July 27-31	Logistics, How do we zoom?, Form and Function SA/V Ratios, Animal Tissues, Homeostasis Metabolism, Bioenergetic Strategies Nutrition & Digestion	Chapters 39, 50 Module 1	***Pre-survey - Complete prior to week 1*** ***Watch all content videos*** ***Homework 1*** ***Graphing & Statistics Practice*** ***Quiz 1***	• Select disease paper (individually) & read • Meet with group; select one paper from group and submit for approval • DUE SUNDAY AUG 2	**Homework Help, Guided Group Work Time**
Week 2	Aug 3-7	Osmoregulation, Salt & Water Balance; Mammalian Kidney Function Animal Circulatory & Respiratory Systems Oxygen Transport, Human Respiration Nervous Systems	Chapters 51, 49, 48, 44 Module 2	***Watch all content videos*** ***Homework 2 and 3*** ***Quiz 2***	• Paper Annotations • DUE SUNDAY AUG 9	**Do Fish Drink Water; & Heart Diagrams Homework Help and Group Work**
Week 3	Aug 10-14	Animal Development I: Differential Gene Expression; Cell Potency, Pattern Generation Maternal Effects Genes, Stem Cells, Fertilization & Early Development Animal Development II: Germ Layers Gastrulation Organogenesis, Neurulation Extraembryonic membranes	Chapters 19, 43 Module 3	***Watch all content videos*** ***Homework 4 and 5*** ***Quiz 3***	• Paper Summaries (peer reviewed) • DUE SUNDAY AUG 16	**Homework help, paper summary review, development concept maps**
Week 4	Aug 17-21	Introduction to Plants, Plant Diversity, Plant Structure & Function, Plant Tissues Water Transport & Sugar Transport, Stomata Plant Nutrition: Soil, Cation Exchange, mycorrhizae, N-fixation, Plant Defenses	Chapters 33, 34, 35 Module 4	***Watch all content videos*** ***Homework 6*** ***Quiz 4***	• Presentation Drafts (peer reviews) • **DUE THURSDAY AUG 20** • Peer Reviews due SUNDAY AUG 23	**Homework help presentation draft work time**
Week 5	Aug 24-28	Plant Growth & Regulation Photosynthesis Plant Reproduction & Development	Chapters 36, 37, 10, 19 Module 5	***Watch all content videos*** ***Homework 7*** ***Quiz 5***	• Final Presentations • Present (Dates TBD)	**Homework Help**
*****The syllabus is subject to change*****						

Book Chapter Equivalents

Ninth/Tenth Edition	Eleventh Edition
40	**39**
51	**50**
52	**51**
50	**49**
49	**48**
45	**44**
48	**47**
19	**19**
44	**43**
34	**33**
35	**34**
36	**35**
37	**36**
10	**10**
38	**37**

% in Course	Grade
97-100	A+
93-96	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
70-76	C
67-69	D+
63-66	D
60-62	D-
</=59	F