BICD 100: Molecular Genetics
SUMMER SESSION 1, 2016
June 27-July 30, 2016

Course objectives: Why do children look like their parents? How is all the information for living beings to survive, thrive and play soccer encoded in a cell? Where is the smart gene located? How can we identify individuals that might be susceptible to disease? How is it that all humans are 99.999% alike, yet very different? Why is cancer such a difficult disease to defeat? How can we use observation of patterns as well as planned or unplanned experiments to deduce the answers to these questions? BICD 100: is an introduction to these questions, the methodology we are using to answer them and a few answers. BICD 100: is an introduction to the principles of heredity emphasizing diploid organisms.

Learning goals:

- Design experiments and analysis results, using genetic techniques and methodology to answer biological questions.
- Gain an excitement and appreciation for genetics as a foundation to understanding the biological world
- Explain core concepts of inheritance
- Engage and question our understanding of genetic concepts, determining what we know and don't know
- **What are your goals:_____**

Lectures:

Week 1: Mendel-postulates, molecular basis of postulates, patterns of inheritance, pedigrees
Week 2: Elaborations on Mendel, Recombination, Mapping, Mutations and Genetic disease
Week 3: Phenotypes with multiple genes, Genetic Methodology
Week 4: Genomes: sequencing, non-coding aspects of the genome
Week 5: Case studies: Sex-determination, Cancer, others- suggested by students (possibilities include: Developmental biology, iPS/Stem cells, Epigenetics, Bacterial genetics, Genetic engineering)
(For a more detailed lecture list-see the website.)

Instructor:	Dr. Joshua Bloomekatz, Ph.D	jbloomekatz@ucsd.edu
IAs:	Jessica Grudzien,	jgrudzie@ucsd.edu
	Reanna Liaw	rbliaw@ucsd.edu
	Kevin Pinney	kpinney@ucsd.edu
	Kaylee Turman	kturman@ucsd.edu
	Ailin Zhang	aiz001@ucsd.edu

Lectures: MTWTh: 11am-12:20pm, Peterson 110

Discussion sections: Discussion sections will start the first week of class. You are expected to attend the discussion section you have enrolled in. Discussion sections provide a small class environment in which to ask questions, teach others, and engage in small group work. As such they are essential to class and doing well. A portion of your grade will be dependent on your attendance and participation in discussion sections.

- **Monday 1:00-2:50pm Centr 220**
- **Monday 3:00-4:50pm Centr 220**
- **Wednesday 5:00-6:50pm Centr 220**
- **Friday 11:00-12:50pm Centr 220**

Midterm: Monday July 11, 2016 in class

Final: Friday, July 29, 2016 11:30-12:30 Building/Room TBA

Prerequisites: BILD1 is a required prerequisite for this course.

Textbook: Essentials of Genetics, by Klug, Cummings, Spencer and Palladino, 8th edition. Optional but recommended is the study guide and solution manual.

Course website: http://tritoned.ucsd.edu No material will be handed out in class. All useful information regarding the class will be uploaded here include, slides from lectures, problem sets, etc.

VIDEOCASTING: Class lectures are videocast and are available for download soon after lecture. Download videocasts at http://podcast.ucsd.edu/

Contact information:

-For administrative questions regarding enrollment contact: biousis@ucsd.edu
-All other questions should be directed to IAs or discussion boards, first.
-For questions not addressed by IAs, instructor email- jbloomekatz@ucsd.edu, please include BICD 100 in subject line and student PID.

Office hours: Office hours for IAs and instructor can be found on the website.

Clickers: You will need an i-clicker for this course. Engagement and proactive thinking are essential components of learning and mastering the material. These activities are facilitated by clickers. Clicker questions will be asked in each lecture and you will receive points for answering (either correctly or incorrectly). There will be enough clicker questions throughout the quarter to reach the maximal points, even if you forget your clicker on occasion.

You must register you i-clicker in order to receive credit for answering questions. You can register your i-clicker on the website.

Problem sets: Solving problems and designing experiments is essence of Genetics. Problem sets will be assigned at the beginning of each week and will be due on Monday morning prior to lecture, after lecture the answer key will be posted.

Grading:

30%	**Midterm**	**(240 pts)**
40%	**Final**	**(320 pts)**
15%	**Discussion section**	**(120pts)**
10%	**Problem sets**	**(80 pts)**
5%	**Clickers**	**(1 pt/question to a max. of 40pts)**

>85%	**A (A-, A, A+)**
>75%	**B (B-, B, B+)**
>65%	**C (C-, C, C+)**
>55%	**D**

If necessary, these cutoffs will be adjusted downward so that at least 50% of students in the class receive an A or a B, but they will not be adjusted upward for any reason. There is NO rounding of grades. The ONLY recourse to receive a higher grade is to successfully submit a regrade request on an exam.

TIPS ON HOW TO DO WELL:

BICD 100 (like many other university courses) is complex enough to reward the student who gives some thought to how to take it. The most important trick is to keep up. The pace is unrelenting because BICD 100, especially during the summer must move rapidly. Unlike other courses, genetics is about problems; doing problems, figuring out which experiments can be used to address different problems, etc. The more problems you do the better you'll grasp the concepts.

The following practices can help you succeed:

- **<u>Engage</u> with the material!** Ask questions, pull and push at the material, figure out why this or that is done that way, make connections between different parts of the material, figure out how different concepts can be used to answer other questions…. (talk with the IAs, talk with other students)
- Assess yourself frequently and accurately! Try to teach a topic to a friend or draw out an important figure from memory. Don't ask "do I understand this?" Ask "how would I explain this?"
- Be present and take good notes during lectures. Then take notes on those notes. Re-organizing them so it makes sense to you.
- Don't fall behind, figure out if you don't understand something and then figure out why.

- Use the textbook and internet resources (see the Links Section of the course TritonEd page) as reference material to help you better understand lecture material. It's rarely beneficial to read a textbook like a novel from front to back.
- Attend discussion section and prepare well for them. Go through the previous week's material and come up with specific topics or questions for the IA to clarify.
- Take all the material from lecture, the videocast, the textbook, and the PowerPoints and consolidate it in a fashion that makes sense. The key to understanding and remembering so much complex concepts and terminology is to ORGANIZE, ORGANIZE, ORGANIZE!
- When you study, keep a running list of questions and issues you are having with the material. Bring those questions to office hours or a study group.
- It's better to study for short bursts often than in massive cramming sessions. Change your study area occassionally.

Watch these videos linked below for even more effective study tips:

https://www.youtube.com/watch?v=p60rN9JEapg

Since your grade will be decided entirely from your final score and not based on how you do compared to other students in the class, it will never hurt you to help fellow students. In fact, research on learning has shown that whether you are on top of the material or are having a hard time understanding the concepts, you will improve your learning by discussing the material with other students. Participation in study groups and in peer discussion of clicker questions is therefore, highly recommended.

Exams:
MAKE-UP EXAMS ARE NOT AVAILABLE. EXAMS ARE OFFERED AT THE SCHEDULED TIME ONLY. Advise your coaches, teammates, traveling companions, significant others, and families accordingly. The exam will consist of multiple choice, short essay, short answer, and quantitative or graphical material designed to test your ability to synthesize information presented in the lectures and readings. The midterm exam will be based on material up to the lecture preceding the exam unless announced otherwise in class. **You must have a photo ID to turn in your exam.**

MISSED EXAMS: There are no make-up exams, so unexcused absences from scheduled exams will be recorded as zeroes. Unusual and serious problems that affect your ability to take a scheduled exam (e.g., death or serious illness in the family or personal tragedy/health issue) must be communicated to Dr. Bloomekatz directly. You will be required to provide official documentation of an unavoidable emergency (e.g., serious illness, etc.). Without such documentation, you will receive a zero for that exam. For a missed midterm exam with valid documentation, you will not make up the exam, but everything else in the course will be graded proportionally higher. For a missed final with valid documentation, you will be issued an incomplete grade, which can then be made up with the instructor after the end of the quarter.

The use of cell phones or any other electronic devices is not permitted during exams. Cell phones or other communication devices must be turned off and stored before entering the lecture hall at

all times. Use of a cell phone, PDA, or other similar electronic devices during an exam, quiz or assignment is grounds for receiving a failing grade.

Laptop computer policy: Students are welcome to bring laptops to lecture for note-taking purposes. Laptops must be put away (closed and powered off or on sleep mode) during any lecture quizzes, assignments or exams.

RE-GRADES: It is your responsibility to check your exam for clerical errors in grading. If a grading error has been made, you should submit a re-grade request to Dr. Bloomekatz by one week of return of the exam. Write a concise description of the alleged error on a separate, attached piece of paper. No re-grades are possible for exams written in pencil or non-permanent ink. Students who submit exams for re-grading understand that we may (1) re-grade the entire exam, and (2) compare the submitted paper to a scanned copy of the original exam. Since course grades are due with the Division of Biology 72 hours after the final exam is given, re-grades of the final will be handled as follows: Graded final exams will be available for pickup one week after the final is given. Re-grade requests must be made directly to Dr. Bloomekatz within one week after graded exams are made available. If the re-grade request is valid and it affects the letter grade of the student in the course then Dr. Bloomekatz will change your course grade.

OSD: Students requesting accommodations and services due to a disability for this course need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), prior to eligibility for requests. Receipt of AFAs in advance is necessary for appropriate planning for the provision of reasonable accommodations. For more information, contact the OSD at (858) 534.4382 (V); (858) 534-9709 (TTY); osd@ucsd.edu, or http://osd.ucsd.edu.

Academic Integrity: Academic dishonesty will not be tolerated in this course. According to UCSD policy, academic dishonesty includes:

- taking an exam for another student
- allowing another student to take an exam for you
- copying another student's work on an exam
- allowing another student to copy your work on an exam
- altering a graded exam and submitting it for a regrade.

Since clicker questions earn you course credit, responding to them using another person's clicker will also be considered an act of academic dishonesty. If the IAs see a student using more than one clicker, these clickers will be confiscated immediately. Any student caught cheating or suspected of cheating will be reported to the UCSD Academic Integrity Coordinator and the Dean of the student's college. Confirmed cases of cheating will result in the student receiving an F as their final grade and other disciplinary actions determined appropriate by the Academic Integrity Coordinator.

Last modified: Monday, June 20, 2016