

Office: Muir Biology rm. 5254

E-mail: a5cooper@ucsd.edu (Include BILD1 in the subject line)

Course Meets: MTuWTh 9:30-10:50 am CENTR 105

Office Hours: Monday and Wednesday 1:30-2:30 Muir Biology rm 5245 (or by appointment)

Course Learning Objectives:

By the end of this course, you should be able to:

1. Relate the structure of organelles/molecules to their cellular function.
2. Diagram how energy is produced and consumed in the cell.
3. Describe how biological information is stored, expressed, and regulated.
4. Explain how traits are inherited and how mutations arrive.
5. Give examples of cellular processes that are utilized by scientists to advance research.

Contacting Me: Please ensure that all e-mails include BILD1 in the subject line and if the matter requires immediate attention include URGENT in the subject line as well. If I do not respond to an e-mail within 24 hours please send it again.

Required Text: *Campbell Biology in Focus, 2nd Edition* by Urry, Cain, Wasserman, Minorsky and Reese (Pearson 2016). Mandatory readings will be assigned from this text for every lecture which will be essential for your full comprehension of the material presented. You can also use the more detailed *Campbell Biology* text by the same authors, as all of the required figures and text are present, however you are responsible for correlating the chapter and page numbers.

TritonEd: All course related information will be posted on our TritonEd site. The lecture slides will usually be posted either before lecture or immediately after. Please check the TritonEd site and your UCSD e-mail regularly for any announcements.

Podcast: Each lecture will be podcasted.

iClickers: iClickers are required for this course. The frequency in this classroom is AB. You must register your clicker on TritonEd by Monday July 7th. Clicker participation will be counted beginning with Lecture 2 (7/5).

Instructional Assistants (IAs): Tanner Howard t1howard@ucsd.edu
Erika Robinson etrobins@ucsd.edu

Discussion Sections: Sections begin Thursday, July 6th (Tuesday is a holiday). You will get one participation point for each section you attend (more details below). The content will vary from meeting to meeting, however, active engagement with the material in each section is critical to developing your understanding of the lecture material.

Reading Assignments and Checks: Each lecture has a mandatory assigned reading that can be found on the Course Schedule below. In addition there will be a Reading Check on the TritonEd site for every reading assignment that must be completed by 9:00 am the day of the associated lecture. The purpose of these readings is to familiarize yourself with the concepts and terminology we will be discussing in each lecture.

Exams: The exams dates are set and will not be changed so plan your summer accordingly. Exam 1 is scheduled for July 12th in class and will cover material on Lectures 1-4. Exam 2 is scheduled for July 24th in class and will cover material on Lectures 5-10. The Final Exam is scheduled for August 4th (room to be determined) and will be cumulative (1/3 focus on old material and 2/3 focused on new material). If you do better on the Final than one (or both of the exams) then your Final score will replace the lower Exam score (more details below).

Regrades: If you find an error on your exam you should submit a written re-grade request, along with the exam, to the Instructor within one week of the exam being returned. In this re-grade request you should explain both the perceived error and your justification of why it is an error. No re-grades will be allowed for exams written in pencil or non-permanent ink. Students that submit an exam for regrade understand that (1) the entire exam may be re-graded and (2) the exam will be compared to a copy to ensure no alterations have been made.

Participation Points: Clicker points will be counted starting Wednesday July 5th. For each class where you answer $\geq 75\%$ of the questions, you will get one participation point. You do not need to get the correct answer. For a majority of clicker questions you will have to submit answers twice (once before and once after discussion) and both of these submissions are required. You will also get one participation point for each section that you attend. Overall you need to get 85% of the total possible participation points in order to receive the full 5% participation credit. If more than 90% of the class completes the CAPE Evaluations at the end of the quarter, everyone will receive two additional participation points.

Grading: Grading in this course is on a straight point scale so in theory, every person could earn an A! You are not competing with each other for grades, so work together!

	Option 1	Option 2	Option 3
Clickers and Section Attendance	10%	10%	10%
Pre-Reading Checks	5%	5%	5%
Exam 1	20%	0%	20%
Exam 2	20%	20%	0%
Final	45%	65%	65%
Total	100%	100%	100%

Your final grade will be calculated using each of these possible point distributions and the one that results in the highest grade will be used.

Disability Access: Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD) which is located in University Center 202 behind Center Hall. Students are required to present their AFA letters to Faculty (please make arrangements to contact me privately) and to the OSD Liaison in the department in advance so that accommodations may be arranged.

Contact the OSD for further information:

858.534.4382 (phone)

osd@ucsd.edu(email)

<http://disabilities.ucsd.edu>(website)

Title IX Compliance: The University recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a member of this community, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you want to speak confidentially you may contact the Counseling Center.

The Office for the Prevention of Harassment & Discrimination (OPHD) provides assistance to students, faculty, and staff regarding reports of bias, harassment, and discrimination. OPHD is the UC San Diego Title IX office. Title IX of the Education Amendments of 1972 is the federal law that prohibits sex discrimination in educational institutions that are recipients of federal funds. Students have the right to an educational environment that is free from harassment and discrimination.

Students have options for reporting incidents of sexual violence and sexual harassment. Sexual violence includes sexual assault, dating violence, domestic violence, and stalking. Information about reporting options may be obtained at OPHD at (858) 534-8298, ophd@ucsd.edu or <http://ophd.ucsd.edu>. Students may receive confidential assistance at CARE at the Sexual Assault Resource Center at (858) 534-5793, sarc@ucsd.edu or <http://care.ucsd.edu> or Counseling and Psychological Services (CAPS) at (858) 534-3755 or <http://caps.ucsd.edu>.

Students may feel more comfortable discussing their particular concern with a trusted employee. This may be a student affairs staff member, a department Chair, a faculty member or other University official. These individuals have an obligation to report incidents of sexual violence and sexual harassment to OPHD. This does not necessarily mean that a formal complaint will be filed. If you find yourself in an uncomfortable situation, ask for help.

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 will 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. Any student caught cheating on an exam will receive a failing grade for the course. They may also be suspended from UCSD.

Date	Lecture	Topic	Reading
7/3	1	Intro, Chemistry of Life	Chapter 1-Introduction: Evolution and the Foundations of Biology <ul style="list-style-type: none"> • Figure 1.3 p. 4 • “The Cell: An Organism’s Basic Unit of Structure and Function” p. 3-4 • “DNA, the Genetic Material” p. 6-7 • Figure 1.8b p. 7 • “Classifying the Diversity of Life” p. 10-11 • Figure 1.12 p. 10 Chapter 2-The Chemical Context of Life <ul style="list-style-type: none"> • “Elements and Compounds” p. 22-23 • “The Elements of Life” p. 23 • “Subatomic Particles” p. 24 • “Covalent Bonds” p. 27-29 • “Ionic Bonds” p. 29 • “Weak Chemical Bonds” p. 30 • “Hydrogen Bonds” p. 30 • “Cohesion of Water Molecules” p. 33 • “Water: the Solvent of Life” p. 36
7/4	No Class	Independence Day	N/A
7/5	2	Macromolecules	Chapter 3-Carbon and the Molecular Diversity of Life: <ul style="list-style-type: none"> • Figure 3.6 p. 47 • “Sugars” p. 49-50 • “Fats” p. 53-54 • “Protein Structure and Function” p. 58-59 • Figure 3.22 p. 60-61 • “The Roles of Nucleic Acids” p. 64 • “Components of Nucleic Acids” p. 64-65
7/6	3	Cell Structure	Chapter 4—“A Tour of the Cell” <ul style="list-style-type: none"> • “Comparing Prokaryotic and Eukaryotic Cells” p. 75-77 • Figure 4.4 p. 76 • Figure 4.7 p. 78-79 • “The Nucleus: Information Central” p. 80 (1st ¶) • “Ribosomes: Protein Factories” p. 82 (1st ¶) • “The Endoplasmic Reticulum: Biosynthetic Factory” p. 83 • “The Golgi Apparatus: Shipping and Receiving Center” p. 84 (1st & 2nd ¶) • “Lysosomes: Digestive Compartments” p. 85 (1st ¶) • “Vacuoles: Diverse Maintenance Compartments” p. 86 (1st ¶)

			<ul style="list-style-type: none"> • “Mitochondria and Chloroplast Change Energy from One Form to Another” p. 87 (1st ¶) • “Roles of the Cytoskeleton: Support and Motility” p. 90-91 • Table 4.1 p. 91
7/10	4	Membranes	Chapter 5—“Membrane Transport and Cell Signaling” <ul style="list-style-type: none"> • “The Fluidity of Membranes” p. 101-102 • Figure 5.7 p. 103 • Figure 5.8 p. 104 • Figure 5.18 p. 113
7/11	5	Metabolism	Chapter 6—“An Introduction to Metabolism” <ul style="list-style-type: none"> • “Forms of Energy” p. 123 • “Substrate Specificity of Enzymes” p. 132-133 • “Catalysis in the Enzyme’s Active Site” p. 133-134
7/12	Exam 1	Lectures 1-4	N/A
7/13	6	Cellular Respiration	Chapter 7—“Cellular Respiration and Fermentation” <ul style="list-style-type: none"> • “The Principle of Redox” p. 142-143 • “The Stages of Cellular Respiration: A Preview” p. 145-146 • “Comparing Fermentation with Anaerobic and Aerobic Respiration” p. 156-157
7/17	7	Photosynthesis	Chapter 8—“Photosynthesis” <ul style="list-style-type: none"> • “Chloroplasts: The Sites of Photosynthesis in Plants” p. 162-163 • “The Two Stages of Photosynthesis: A Preview” p. 164-165 • “Photosynthetic Pigments: The Light Receptors” p. 166-168
7/18	8	Cell Communication	Chapter 5—“Membrane Transport and Cell Signaling” <ul style="list-style-type: none"> • “The Three Stages of Cell Signaling: A Preview” p. 115 • “Protein Phosphorylation and Dephosphorylation” p. 118
7/19	9	Cell Cycle	Chapter 9—“The Cell Cycle” <ul style="list-style-type: none"> • “Phases of the Cell Cycle” p. 185 • Figure 9.7 p. 186-187 • “Stop and Go Signs: Internal and External Signals at the Checkpoints” p. 192-195
7/20	10	Meiosis	Chapter 10—“Meiosis and Sexual Life Cycles” <ul style="list-style-type: none"> • “Sets of Chromosomes in Human Cells” p. 202-203 • Figure 10.8 p. 206-207 • Figure 10.10 p. 209
7/24	Exam 2	Lectures 5-10	N/A

7/25	11	Mendel and Genes	Chapter 11—"Mendel and the Gene Idea" <ul style="list-style-type: none"> • "Mendel's Experimental, Quantitative Approach" p. 215 • "Mendel's Model" p. 217-218 • "Useful Genetic Vocabulary" p. 218 • "Pedigree Analysis" p. 228-229
7/26	12	Chromosomal Inheritance	Chapter 12—"The Chromosomal Basis of Inheritance" <ul style="list-style-type: none"> • Figure 12.2 p. 237 • Figure 12.10 p. 245 • "Mapping the Distance Between Genes Using Recombination Data: Scientific Inquiry" p. 245-248
7/27	13	Molecular Inheritance	Chapter 13—"The Molecular Basis of Inheritance" <ul style="list-style-type: none"> • "Getting Started" p. 261-262 • "Synthesizing a New DNA Strand" p. 262-263 • "Antiparallel Elongation" p. 263-264 • "The DNA Replication Complex" p. 264 • Figure 13.17 p. 263 • Figure 13.18 p. 264
7/31	14	Gene Expression	Chapter 14—"Gene Expression: From Gene to Protein" <ul style="list-style-type: none"> • "Basic Principles of Transcription and Translation" p. 280-281 • "Molecular Components of Transcription" p. 284 • "Substitutions" p. 298-299 • "Insertions and Deletions" p. 299-300 • Figure 14.26 p. 299
8/1	15	Gene Regulation	Chapter 15—"Regulation of Gene Expression" <ul style="list-style-type: none"> • "Operons: The Basic Concept" p. 304-305 • "Effects on mRNAs by MicroRNAs and Small Interfering RNAs" p. 315-316
8/2	16	DNA Technology	TBD
8/3	Review	In-Class Review Session	N/A
8/4	Final	1/3 Old & 2/3 New Material	N/A