USABO 201S -2024

Course Description & Goals

The USA Biology Olympiad (USABO) is the premier biology competition for high school students. This USABO 201 program focuses on preparing highly motivated students for qualification for the USABO semifinals and beyond. Over the course of approximately 8 months, all of the topics that come up on the USABO exams will be covered. This course is suitable for students who have taken AP biology or USABO 101 and who intend to take the USABO exam seriously. Students will learn the fundamental concepts of advanced biology, which will not only prepare them for the USABO but also provide valuable preparation for the AP Biology Exam and biology/chemistry-related classes in school. All lectures will be given in English.

Instructor

John Kim – STEM & ROOT Academy Founder

Tentative Class Schedule

2024 Summer

- **Period:** 6/10-8/10 (34 sessions, 68 hours), **No Class: 7/3, 7/5 (Independence Day)*
- **Time: 3-5PM (PT), Mon / Wed / Fri / Sat**

2024 Fall/Winter: 8/19/2024-2/1/2025 (46 sessions)
2 hours/session * 2 sessions/week * 24 weeks
**No Class: Thanksgiving Day, Christmas Day*

**USABO Exam Date: February 2025*

Class Format

- Zoom (Live Online) - Lecture

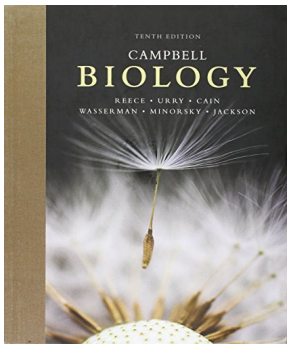
- Google Classroom - Providing Lecture Materials and other materials
  - Assigning / grading HW
  - Communicating with students
  - Keeping students informed of current and upcoming events

Class Materials

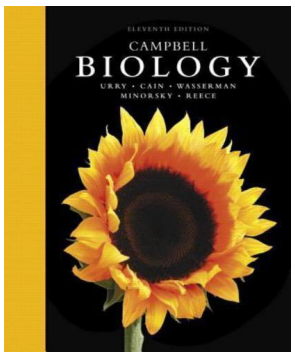
- **We will provide all class materials** (Lecture notes, Study guides, Quizzes, Simulation Tests, etc.) *except the textbook.*

- **3- ring binder** (or other organizer of choice for lecture notes and handouts): **Lecture materials should be printed out** and organized in order.

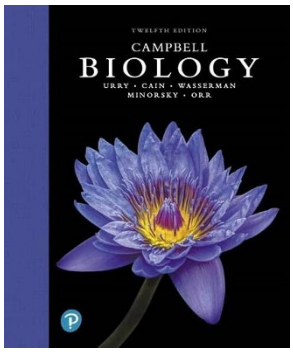
- **Textbook**: **Campbell Biology (Pearson)** 10th or newer edition, Reece, Urry, Cain, Wasserman, Minorsky, Jackson. (**Purchase** via AbeBooks, Thriftbooks, Amazon, Chegg, etc. **prior to the first class**)



10th edition: ISBN-10: 0321775651 / ISBN-13: 9780321775658



11th edition: ISBN-10: 0134093410 / ISBN-13: 9780134093413



12th edition: ISBN-10: 0135188741 / ISBN-13: 9780135188743

Class Policies, Expectations and Rules

- Join every class on time (**5 min prior to each class**) with your materials (lecture notes, textbook, supplementary handouts) out and ready.
- Spend **at least 30 minutes** (**right before each class**) reviewing/previewing materials.
- Turn on webcam and **show your face**. I would like to see what you are up to, just as you would be required to attend in-person classes.
- **Take notes** while listening to my lecture.
- **Actively participate in Q&A** during the class.
- Submit weekly assignments **on time** (due date/time for each HW will be set/notified via google classroom)
- Eating and drinking is allowed only if it does not cause any distraction.

Assignments & Self-Study

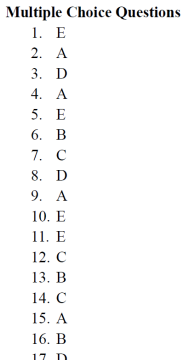
1. **End of Chapter Quiz (Closed book)** – I expect students to miss **no more than 5** questions. If you miss more than 5 questions, it indicates that you need to spend more time on self-study, including review/preview, and pay more attention during class.
2. **Review of Incorrect Questions -** Before class starts, you need to correct the missed questions on the quiz and the study guide. Additionally, if you have any questions that you cannot answer or do not understand, make a list before class, and ask those questions in class. We will go over them together.
3. **Reading the Textbook**: see the last page for the textbook reading schedule.

Assignment Submission

- Homework must be submitted by **7PM (PT) a day before** the following class. Assignments will be graded as soon as possible such that students have enough time to make corrections and know what questions to ask before class.

- Your homework must be submitted as **"one" PDF or google doc file only**. (**No photos such as .jpeg)**

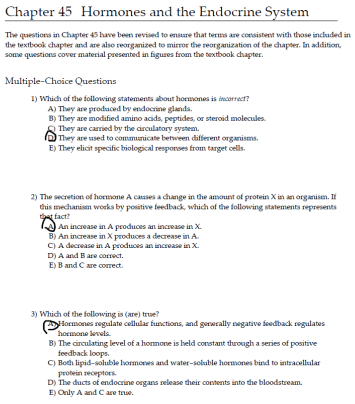
- **Recommended PDF file converters or apps** to write on PDF files
    - For PC/Mac, use www.combinepdf.com : jpeg → PDF conversion
    - For Tablet/Ipad: GoodNotes, Notability, Documents, Onenote, Samsung Notes.
    - For Phone: Camscanner- PDF scanner app
    - No Kami App– not compatible with google classroom. But if you still want to use Kami, generate PDF file using the app first and use www.combinepdf.com to do PDF → PDF conversion. Submit PDF file generated from the "combinepdf.com"



Multiple Choice Questions

1. E
2. A
3. D
4. A
5. E
6. B
7. C
8. D
9. A
10. E
11. E
12. C
13. B
14. C
15. A
16. B
17. D

Google doc



Chapter 45 Hormones and the Endocrine System

The questions in Chapter 45 have been revised to ensure that terms are consistent with those included in the textbook chapter and are also reorganized to mirror the reorganization of the chapter. In addition, some questions cover material presented in figures from the textbook chapter.

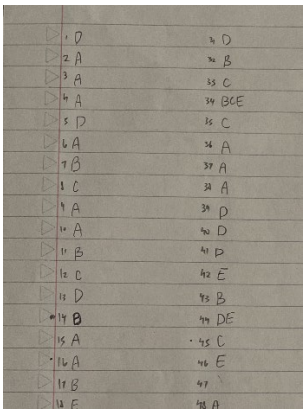
Multiple-Choice Questions

1) Which of the following statements about hormones is *incorrect*?
A) They are produced by endocrine glands.
B) They are modified amino acids, peptides, or steroid molecules.
C) They are carried by the circulatory system.
D) They are used to communicate between different organisms.
E) They elicit specific biological responses from target cells.

2) The secretion of hormone A causes a change in the amount of protein X in an organism. If this mechanism works by positive feedback, which of the following statements represents that fact?
A) An increase in A produces an increase in X.
B) An increase in X produces a decrease in A.
C) A decrease in A produces an increase in X.
D) A and B are correct.
E) B and C are correct.

3) Which of the following is (are) true?
A) Hormones regulate cellular functions, and generally negative feedback regulates hormone levels.
B) The circulating level of a hormone is held constant through a series of positive feedback loops.
C) Both lipid–soluble hormones and water–soluble hormones bind to intracellular protein receptors.
D) The ducts of endocrine organs release their contents into the bloodstream.
E) Only A and C are true.

PDF



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Notification of Absence & Make-up Policies

- Students/parents must notify STEM & ROOT Academy as promptly as possible of any absence (**at least 24h prior to a scheduled class**)

- If a student is going to be absent from class, we will send you **a recording** of the live lecture. You can also find the full content of the class in our google classroom so you can follow along and do homework.

- Make-up recording will be available only for **1 week**, until the following class. Make sure to watch it as soon as possible to keep your pace.

Academic Dishonesty

Plagiarism (the practice of taking someone else's work or ideas and passing them off as one's own) is a severe offense. Examples of academic dishonesty include (not an exhaustive list): **copying work from another student or the internet, using online searches to find answers** to the end of chapter quizzes, posting answers to assignments online.

Class curriculum & Textbook Reading Schedule

	Campbell Biology	Theme
Ch 1	The Themes of Biology and Scientific Inquiry	**Introduction**
Ch 2	The Chemical Context of Life	**Biochemistry**
Ch 3	Water and Life	
Ch 4	Carbon and the Molecular Diversity of Life	
Ch 5	The Structure and Function of Large Biological Molecules	
Ch 6	A Tour of the Cell	**Cell Biology**
Ch 7	Membrane Structure and Function	
Ch 11	Cell Communication	
Ch 8	An Introduction to Metabolism	
Ch 9	Cellular Respiration and Fermentation	
Ch 10	Photosynthesis	
Ch 12	The Cell Cycle	
Ch 13	Meiosis and Sexual Life Cycles	**Genetics**
Ch 14	Mendel and the Gene Idea	
Ch 15	The Chromosomal Basis of Inheritance	
Ch 16	The Molecular Basis of Inheritance	**Molecular Biology**
Ch 17	Gene Expression: From Gene to Protein	
Ch 18	Regulation of Gene Expression	
Ch 19	Viruses	
Ch 20	DNA Tools and Biotechnology	
Ch 21	Genomes and Their Evolution	
Ch 22	Descent with Modification: A Darwinian View of Life	**Evolution**
Ch 23	The Evolution of Populations	
Ch 24	The Origin of Species	
Ch 25	The History of Life on Earth	
Ch 26	Phylogeny and the Tree of Life	**Systematics**
Ch 27	Bacteria and Archaea	

Ch 51	Animal Behavior	**Ecology**
Ch 52	An Introduction to Ecology and the Biosphere	
Ch 53	Population Ecology	
Ch 54	Community Ecology	
Ch 55	Ecosystems and Restoration Ecology	
Ch 56	Conservation Biology and Global Change	
Ch 35	Plant Structure, Growth, and Development	**Plant Anatomy & Physiology**
Ch 36	Resource Acquisition and Transport in Vascular Plants	
Ch 37	Soil and Plant Nutrition	
Ch 38	Angiosperm Reproduction and Biotechnology	
Ch 39	Plant Responses to Internal and External Signals	
Ch 40	Basic Principles of Animal Form and Function	**Animal Anatomy & Physiology**
Ch 41	Animal Nutrition	
Ch 42	Circulation and Gas Exchange	
Ch 43	The Immune System	
Ch 44	Osmoregulation and Excretion	
Ch 45	Hormones and the Endocrine System	
Ch 46	Animal Reproduction	
Ch 47	Animal Development	
Ch 48	Neurons, Synapses, and Signaling	
Ch 49	Nervous Systems	
Ch 50	Sensory and Motor Mechanisms	