

AP Biology: from Basic Knowledge to Exam Preparation

Description

This course is composed of 10 lectures and will systematically describe major aspects of AP Biology. The students will learn fundamentals of modern biology including but not limited to genetics, biochemistry, biophysics, molecular biology, cell biology, physiology, ecology and evolutionary biology.



Textbook:

Campbell Biology AP Ninth Edition (Biology, 9th Edition)

Barron's AP Biology, 6th Edition

Lehninger Principles of Biochemistry

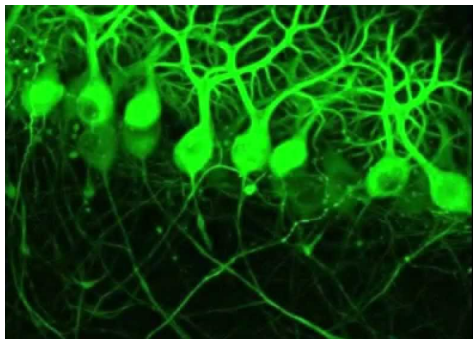
Stern's Introductory Plant Biology

Principles of Anatomy & Physiology 13th Edition by Gerard J. Tortora and Bryan H. Derrickson

Janeway's Immunobiology 9th New edition

Principles of Neurobiology by Liqun Luo

Note: students could use a different edition of the textbooks. Only *Campbell Biology AP* and *Barron's AP Biology* are mandatory.



Format of the course:

The lectures will be given online via a Zoom conference of one hour each week. At the end of each lesson, there will be 15 minutes for questions!

Students will have assignments, most likely essay writing after certain literature search. Rubric are shown in the following sections.

This course is designed for a small group of learners who are self-motivated to establish a solid biology background.

The instructor believes the following groups of students will benefit from this course:

- 1) Those interested in biology, chemistry and physics;
- 2) Those interested in careers in the life sciences or in STEAM;
- 3) Those intending on studying in an American high school or university;
- 4) Those intending to improve their science writing or writing in general;
- 5) Students aged 13-18.

Instructor: BS in Life Sciences from Tsinghua University. MA in Biology from Harvard University. PhD in Biology from Harvard University. Research fellow of Harvard Medical School.

Course leader: Howard Shen, Masters of Education with a concentration in Technology from Harvard University in 1997. Mr. Shen was a former staff officer and lecturer at Harvard University. He was the IT lecturer and online course manager of Program for Global Leadership from 1997 to 2001 at Harvard Business School.



Weekly schedule (tentative and can be adjusted with students' interests):

Classes begin 12 October 2020, Monday evenings, 21:00—22:00.

Week 1: Introduction, basis of biochemistry

Week 2: Cell biology (structure and function of the cell, cell cycle)

Week 3: Energy metabolism (respiration and photosynthesis)

Week 4: Genetics

Week 5: Molecular biology

Week 6: Evolution and biological diversity

Week 7: Plant and animal physiology

Week 8: Human nervous system and immune system

Week 9: Developmental biology, ecology

Week 10: Animal behavior, closing remarks

The following rubric is for optional essay:

Item	1-2	3-5	6-8	9-10
Grammar	Obvious grammatical errors, punctuation mistakes, poor verb conjugation that should have been caught by spellcheck	Basic grammatical errors, punctuation mistakes, poor verb conjugation that should have been caught by proofreading	Minor grammatical errors, punctuation, etc.	Few or no grammatical mistakes; sentences read fluently, punctuation is appropriate and not overused or underused;
Spelling	Multiple obvious spelling errors that should be addressed with spellcheck; spelling errors affect comprehension of text	Basic spelling errors, the spelling does not affect comprehension but it stands in the way of easy reading	Minor spelling errors, confusion of words, minor mistakes when spelling difficult words, or mistakes in conjugation	Few or no spelling errors
Vocabulary	Careless or inaccurate word choice that obscures meaning	Language that is trite, vague, or flat	Shows some variety of word choice, there is purposeful use of words	Effective and engaging use of word choice
Conciseness	Frequent run-ons or fragments, poor punctuation, poor understanding of the material	Writer inserts unnecessary sentences or opinions that are out of place; essay is not focused on topic	Writer uses clear point of view and writes with an understanding of the audience; sentences are of appropriate length for topic	Writer has a strong sense of style and voice and communicates concepts and ideas clearly and succinctly and with style
Organization	Writing is disorganized and underdeveloped with no transitions or closure	Writing is brief and underdeveloped with weak transitions and closure	Uses correct writing format, incorporates a coherent closure to ideas and makes transitions between ideas	Writing includes a strong and clear beginning, middle, and end with appropriate transitions and good closure
Logic	Writing is extremely limited in communicating knowledge with no central theme	Writing is limited in communicating knowledge; length may not be appropriate	Writes related ideas, quality paragraphs, coherent concepts, and does not diverge from topic	Writing is purposeful and focused; ideas contain examples and details

Item	1-2	3-5	6-8	9-10
Data	Writer uses no relevant information from the resources	Writer uses limited data from resources, may not apply concepts appropriately	Writer uses data from resources, applies the data in relevant ways	Writer uses data from resources with a keen understanding of implications and addresses those implications
Beginning	Has no introduction and/or does not have a thesis statement	Has a weak introduction and a weak thesis statement that does not introduce topics discussed in the essay	Has an introduction and a thesis statement that are relevant to the essay	Has an introduction and thesis statement that are both relevant in addition to providing an outline for the contents of the essay
Conclusion	Has no conclusion or conclusion is not related to essay	Conclusion is present but it does not provide a relevant summary of the essay and does not draw conclusions	Conclusion summarizes essay and outlines ideas presented	Conclusion is concise, draws clear, logical ideas and implications from the material included

Additional remarks:

Please be sure to check the link for the NYTimes Student Essay Competition, where you will find information on the STEM essay competition. Parents are encouraged to help their student research and formulate the essay.

New York Times Student Contest:

<https://www.nytimes.com/2020/07/15/learning/our-2020-21-student-contest-calendar.html>

Please reference the link above to view the calendar of upcoming events and contests. The STEM writing contest spans from January 19—March 2, 2021. There are other contests that you may wish to investigate.

Tuition

The tuition for the entire course, including all course materials: \$350

Early bird offer (sign up by Sept. 21st): \$300

Group discount: \$300 (for two students or more)

Please send payment via PayPal hshen@ginsengedu.com or Alipay caiwu@50edu.cn.

Registration

Please register with the link: <https://forms.gle/qasUcTyofDum8jF89>, or QR code below. You can also register by emailing hshen@ginsengedu.com, or visiting www.ginsengedu.com.

