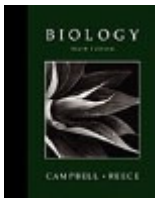
Course Syllabus

Advanced Biology A Syllabus

Required Student Text: Campbell Biology (6th edition)
Student Text and E-Book ISBN: 0-8053-6624-5



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Course Description:
The two semester course will acquaint you with the main themes in biology and is designed to be the equivalent of a two-semester college introductory biology course taken by biology majors and covers the topics of molecules and cells, heredity and evolution, organisms and populations. Advanced Biology A, the first semester, will focus on chemistry of life, cells, cellular energetics, heredity, molecular genetics, and evolutionary biology. The second semester course, Advanced Biology B, will focus on the diversity of organisms, the structure and function of plants and animals, and ecology. Class activities will include discussion, problem solving, online lab simulations and other interactive activities, lab reports, and an exploration project. The twelve required Labs will be performed via online lab simulations, six each semester. Extensive practice in essay writing and in understanding and responding to multiple choice questions are an integral part of the class.

Learning Outcomes:

At the completion of Advanced Biology A, the student will be able to

1. develop a conceptual framework for modern biology
2. design scientific experiments and interpret experimental results
3. recognize unifying themes that integrate major topics of biology
4. list and describe the fundamental characteristics of living organisms
5. explain the chemical processes underlying life processes
6. describe the central role of energy in living systems
7. describe the structure and function of cells as the fundamental unit of life
8. explain the role of genes and proteins in reproduction and inheritance at cellular, individual, population, and ecosystem levels
9. describe factors associated with genetic variation in individuals and populations
10. describe the role of natural selection in evolution
11. describe the historical development of major ideas in biology
12. apply biological knowledge and critical thinking skills to environmental and social concerns

Description of Course Methodology:

This project- and inquiry-based course will allow you to generate knowledge about biology via textbook and online readings, synchronous and asynchronous discussion with other students and with the teacher, interaction with online tutorials and animations, participation in online and hands-on inquiry-based simulations and activities, and development of a semester project.

Your teacher will be a guide for the journey, a facilitator, an events planner, and a resource advisor.

Always remember, you are the learner here! You are the one who needs to actively construct and acquire knowledge and this can be achieved by participation and completion of all readings and activities. This course requires your ACTIVE participation! Advanced Biology differs from an introductory high school biology course both in quality and quantity of topics and concepts covered and you are expected to take responsibility for your learning! Informal assessment will include an evaluation of the quality and timeliness of participation in class activities. Formal assessment will involve multiple-choice quizzes, lab reports, and written assignments. A lab exam and a final exam will be given at the end of unit eight.

 **Time Management:**

While flexible pacing is allowed in this course, NUVHS encourages students to spend the full length of the term completing this course and requires a minimum of eight weeks active participation in this course in order to be eligible for a grade. If this full semester course is completed in eight weeks, you should expect to spend 15--20 hours per week on the readings, assignments, discussion (synchronous and asynchronous), quizzes, lab simulations and at home labs (explorations), and tests. The course will cover the material in chapters 1-8 and by the end of week 4 and the material in chapters 9-25 by the end of the course. Because of time limitations some of the topics will be covered in more depth than others, some will be skimmed over, and some may be omitted. KEEP A REGULAR SCHEDULE!

Course Outline

Week	Topics	Activities	Chapter
1	The Science of Biology	Diagnostic Exam Essay: Homeostasis and Experimental Design Online Lab: Environmental Changes Week 1 Quiz	1

2	Chemical Foundations of Life	Essay: Properties of Water Online Lab: Analysis of Rocks and Acid Precipitation Week 2 Quiz	2--3
3	Biochemistry and Metabolism	Essay: Energy and Enzymes Online Lab: Enzyme Catalysis Week 5 Quiz	4--6
4	Cell Structure and Function	Essay: Cell Transport Mechanisms Online Lab: Diffusion and Osmosis Week 4 Quiz	7--8
5	Cell Processes	Essay: Gas Exchange and Cell Cycles Online Lab: Photosynthesis and Cell Respiration Week 5 Quiz	9--12
6	Genetics and Heredity	Essay: Drosophila and Corn Genetics Online Lab: Mitosis and Meiosis Week 6 Quiz	13-15
7	Molecular Biology	Essay: Regulatory Processes Online Lab: Genetics of Organisms Week 7 Quiz	16--20
8	Evolution	Timed Essay: Population Genetics Online Lab: Population Genetics Week 8 Quiz Final Exam	22-25

Assignment Submittal:

 Responses to **Discussion Questions** will be posted in weekly forums in the **Discussion Board** area.

 **Essay Assignments** will be submitted as assignments in the Weekly areas.

 **OnLine Lab Assignments** will be submitted as assignments in the Weekly areas.

Assessment:

Students will be graded on the following criteria:

 **Weekly Quizzes**

(10--20 points each week)

Participation in online discussion forums

(5 points each week)

 **Essay Assignments**

(10--20 points per week)

 **OnLine Lab Assignments**

(10--20 points each week)

 **Final exam**

(100 points)

Grading Scale:

Standard Grading Scale used by National University Virtual High School

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NUVHS Expected Schoolwide Learning Results (ESLRs)

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It is anticipated that NUVHS students will be:

Engaged Learners

1. Demonstrate self-directed learning skills such as time management, and personal responsibility through the completion of course requirements
2. Develop an understanding of their own preferred learning styles to enhance their overall academic potential
3. Incorporate effective and relevant internet and multimedia resources in their learning process to broaden their knowledge base

Critical Thinkers

1. Effectively analyze and articulate sound opinions on a variety of complex concepts
2. Illustrate a variety of problem-solving strategies that strengthen college preparation and workforce readiness
3. Formulate a framework for applying a variety of technology and internet-based research to enhance information literacy and collaborative thinking

Effective Communicators

1. Demonstrate awareness and sensitivity to tone and voice in multiple forms of communication
2. Express concepts and ideas in a variety of forms
3. Enhance communiccation skills through the use of media rich or other technology resources

Global Citizens

1. Appreciate the value of diversity
2. Understand the range of local and international issues facing today's global community
3. Demonstrate awareness of the importance of cultural sensitivity and social responsibility in the 21st century

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