

AP Biology Syllabus

2019-20

Course Overview:

This course is designed to be the equivalent of a two-semester college introductory Biology course, which is taken by Biology majors during their first year of college. This course differs from first a first-year high school Biology course with respect to the kind of textbook used, the range and depth of topics to be covered, the laboratory work to be completed, the time and effort required, as well as the frameworks to which to course work will be held to. This course aims to provide students with the concrete framework, factual knowledge, and critical thinking skills necessary to deal with the quickly changing science of living organisms.

Summer Project:

It is the student's responsibility to cover the first 3 chapters of the AP Biology textbook before school begins for the fall semester. The chapters must be read and guided reading assignment completed. The students should be prepared for a test on the first week of school in August. It is the student's responsibility to come pick up a textbook and guided reading assignment from Mrs. Hooten (room 114) before school releases for summer break.

Chapters to be cover: Chapter 1 – Exploring Life
 Chapter 2 – Chemistry of Life
 Chapter 3 – Water

***note that if Chemistry has not been taken or will be taken simultaneously with AP Biology, extra emphasis and/or extra review may be necessary to prepare for the first unit as it is somewhat Chemistry based.

Materials:

- Writing utensil (pencil or pen for notes, pencil only for lab work)
- 3 ring-binder (2-inch binder preferred because we have a lot of information to cover)
- 2 packages of 5-tab dividers
 - Syllabus
 - Calendar for writing objective and schedule
 - Section for notes for each of the following: Introduction, Big Idea 1, 2, 3, and 4
 - Section for lab activities
 - Section for extra paper
- Standard size, loose leaf notebook paper

- AP Biology textbook: Students will be issued a textbook at the beginning of the year and they are responsible for it the entire school year.

AP Biology Big Ideas and Corresponding Labs:

Big Idea 1 (Evolution): The process of evolution drives the diversity and unity of life.

- Comparing DNA Sequences to Understand Evolutionary Relationships with BLAST
- Mathematical Modeling: Hardy-Weinberg

Big Idea 2 (Cellular Processes: Energy and Communication): Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis.

- Photosynthesis
- Cellular Respiration

Big Idea 3 (Genetics and Information Transfer): Living systems store, retrieve, transmit, and respond to information essential to life processes.

- Biotechnology: Bacterial Transformation
- Biotechnology: Restriction Enzyme Analysis of DNA

Big Idea 4 (Interactions): Biological systems interact, and these systems and their interactions possess complex properties.

- Enzyme Activity
- Pill Bug Animal Behavior

AP Biology Exam: Monday, May 11, 2020

Exam questions assess students' understanding of the big ideas, enduring understandings, essential knowledge, and learning objectives, and the application of those through the science practices. Questions may cover:

- the use of modeling to explain biological principles;
- the use of mathematical processes to explain concepts;
- the making of predictions and the justification of phenomena;
- the implementation of experimental design; and
- the manipulation and interpretation of data

The AP Biology Exam is approximately 3 hours in length. There are two sections which include:

Section I

- Multiple Choice — 69 Questions | 1 Hour, 30 Minutes | 50% of Exam Score
 - Multiple-Choice: 63 Questions, discrete questions, questions in set

- Grid-In: 6 Questions, questions focus on the integration of science and mathematical skills. For these responses, students need to calculate the correct answer for each question and enter it in a grid on that section of the answer sheet.

Section II

- Free Response — 8 Questions | 1 Hour, 30 Minutes (includes 10-minute reading period) | 50% of Exam Score
 - Long Free Response (2 questions, one of which is lab or data-based)
 - Short Free Response (6 questions, each requiring a paragraph-length argument/response)

Expectations & Assignments

- Self-motivation, self-discipline, and maturity are necessary to handle the work required for a college-level course.
- Recommended 1-2 hours of prep time per hour of class time.
- Keeping up with the reading is very important. Read your textbook nightly BEFORE YOU COME TO CLASS!
- Students will be assigned guided reading for each chapter. Sometimes we will cover 32 chapters per week. Homework will be assigned on the prior Friday to allow all weekend to complete.

Classroom Rules:

1. Work hard (do your very best on all your work)
2. Get along with everyone (be respectful and polite even if you do not share the same opinion as others)
3. Be responsible (be on time, be prepared for class, and complete all assignments by due date)
4. Be willing to learn
5. No cell phones or excuses

Procedures and Expectations:

- Students are to be in class, seated in their seats, completing the daily bell ringer assignment and daily planner when the tardy bell rings.
- Raise your hand to ask a question. Do not call out or interrupt the teacher or others. Reference back to rule #2.
- I will be using a door bell as an attention getter. When the doorbell chimes, all students are to be quiet and/or finish what they are doing.
- If students need to borrow a pen /pencil, I will need to borrow something in return (preference is a shoe because you will always need your shoe back and I will always need my pen back).
- Clean up after yourself.

- Students will be allowed 2 bathroom passes per semester to use. Do not interrupt a lesson in order to ask to use the restroom. You must sign out at the clipboards beside the door before leaving and you must take the hall pass with you when you leave. If you need to use the restroom, wait until the lesson is finished, raise your hand, and cross your fingers. When students leave to go to restroom, their cell phone must be placed in the cell phone rack at the back of the room before leaving. I will nod if you may leave. For each bathroom pass not used at the end of each semester, students will receive 10 bonus points. These points will be added to their two lowest grades in the grade book.
- **Cell phones will not be used.** Your headphones, phone, speakers, etc. should not be visible or used at any point during the class period. You may use the cell phone rack to place your phone in before the tardy bell rings. While in the rack, you may charge your cell phone. Do not ask to listen to music, answer a phone call, text your parent, or take a photo. The answer will always be NO. 3 days of lunch detention will be awarded to any student attempting to use their electronics during my class, as well as students will be asked to place their phone in the cell phone rack until the end of class. No exceptions.
- Drinks will be allowed only if they are in a bottle with a screw on lid. Fountain drink or canned drinks will not be allowed. I will ask you to dispose of these drinks upon entering.
- Food will not be allowed in my classroom unless a note is provided. Food causes distractions and makes a mess.
- Presence in my classroom is vital to your success. Missed assignments will be placed in the missed work file folder for you to pick up. This is your responsibility, I will not chase you down to remind you that you have a missed assignment or to complete missing work. You may reference the handbook for excused/unexcused absence policies for MHS. Please note that your credit for this course will be dropped after 10 unexcused absences. If you are not in your seat when the bell rings, you are considered tardy and will be counted as such.
- I will accept late work one day after it is due, but students will only receive ½ credit. All assignments will be listed on the back board and students will keep a record of their daily assignments in their daily planner. This is to ensure their success and accountability.
- No cheating. When you have completed an assignment, students are to turn their paper over. Once everyone is done, students will pass them to the front of their row and I will pick them up to be graded. If students are caught cheating they will be given a zero on the assignment/test. Plagiarism is considered cheating.

Labs:

AP Biology is designed to be a lab-based course. Some labs may run longer than a single class period and may require additional time to complete. Many labs will take upwards of 3-4 days in order to complete pre-labs, design, experimentation, data analysis and reviewing of results. This class has been scheduled during 4th period so that students may extend lab time into lunch if necessary. This only applies if students have 1st lunch. Students will not be kept from getting to their 5th period class on time. **Due to the complexity and perishable nature of certain labs and supplies, it will not be possible to make up labs.** If a student is absent, alternative data

may be supplied for use in completing a collaborative lab presentation. Make sure that on lab days you wear close toes shoes and your hair up if applicable (ponytail).

Big Ideas and Chapter Organization:

The following is a tentative overview of the big ideas that we will cover in class along with the chapters that accompany each. This overview is subject to change but should serve as a reference throughout the school year. Some chapters will be shown more than once, this indicates that the chapter may be split or covered in pieces. We will be starting with Big Idea 3, followed by Big Idea 2, Big Idea 1, finally ending with Big Idea 4.

Introduction into the Chemistry of Life (review)

- Chapter 1 – Exploring Life
- Chapter 2 – The Chemical Context of Life
- Chapter 3 – Water and the Fitness of the Environment
- Chapter 4 – Carbon and the Molecular Diversity of Life, pg. 58-63
- Chapter 5 – The structure and Function of Macromolecules

Big Idea 3 (Genetics and Information Transfer): Living systems store, retrieve, transmit, and respond to information essential to life processes.

- Chapter 6 – A Tour of the Cell, pg. 98-111
- Chapter 7 – Membrane Structure and Function
- Chapter 12 – The Cell Cycle
- Chapter 13 – Meiosis and Sexual Life Cycles
- Chapter 14 – Mendel and the Gene Idea
- Chapter 15 – The Chromosomal Basis of Inheritance
- Chapter 16 – Molecular Basis of Inheritance
- Chapter 17 – From Gene to Protein, pg. 309-326 & 328-331
- Chapter 18 – The Genetics of Viruses and Bacteria, omit 343-346
- Chapter 19 – Eukaryotic Genomes: Organization, Regulation, and Evolution, omit 359-360 & 370-378
- Chapter 20 – DNA Technology and Genomics, omit 398-408
- Chapter 21 – The Genetic Basis of Development, pg. 415-420

Big Idea 2 (Cellular Processes: Energy and Communication): Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis.

- Chapter 8 – An Introduction to Metabolism, omit section 8.3
- Chapter 9 – Cellular Respiration: Harvesting Chemical Energy
- Chapter 10 – Photosynthesis, omit 195-197
- Chapter 11- Cell Communication

Big Idea 1 (Evolution): The process of evolution drives the diversity and unity of life.

- Chapter 22 – Descent with Modification: A Darwin View of Life, omit 438-441
- Chapter 23 – The Evolution of Populations
- Chapter 24 – The Origin of Species
- Chapter 25 – Phylogeny and Systematic, omit 506-508

Big Idea 4 (Interactions/Ecology/Diversity): Biological systems interact, and these systems and their interactions possess complex properties.

- Chapter 26 – The Tree of Life: Introduction to Biological Diversity
- Chapter 27 – Prokaryotes, omit 538-547
- Chapter 36 – Transport in Vascular Plants
- Chapter 39 – Plant Responses to Internal and External Signals, omit 808-812
- Chapter 40 – Basic Principles of Animal Form and Function
- Chapter 43 – The Immune System
- Chapter 45 – Hormones and the Endocrine System, pg. 948-961
- Chapter 48 – Nervous System, omit 1032-1041
- Chapter 50 – An Introduction to Ecology and the Biosphere, omit 1092-1104
- Chapter 51 – Behavioral Ecology
- Chapter 52 – Population Ecology
- Chapter 53 – Community Ecology
- Chapter 54 – Ecosystems
- Chapter 55 – Conservation Biology and Restoration Ecology