The Piedmont Governor’s School for Mathematics, Science & Technology

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Biology 101-102 Lecture and Lab

Dual Enrollment

Instructor: Kelly Oakes

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Office Hours: 11:30-3:00

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College Credit Hours: 8

(3 for lecture and 1 for lab EACH semester)

Course Description:

Biology 101 and 102 explores the fundamental characteristics of living matter from the molecular level to the ecological community with an emphasis on general biological principles. This course provides an inquiry approach to investigating the diversity of living organisms, their structure, function, and evolution. Lecture, discussion, and laboratory analysis are implemented where applicable. The course is designed to meet both the Virginia Standards of Learning and the freshman level science requirements at colleges and universities. Biology 101 and 102 are dual enrollment courses that exceed all Standards of Learning requirements for high school biology.

Text:

Campbell, N. A., & Reece, J. B. (2008). Biology (8th ed.). San Francisco, CA: Pearson Education, Inc.

Course Content:

* Introduction to Biology
* Life’s Chemical Basis
* Molecules of Life
* Cell Structure and Function
* Cell Membranes
* Enzymes and Metabolism
* Photosynthesis
* How Cells Release Chemical Energy
* Mitosis
* Meiosis
* Genetics
* Chromosomes and Inheritance
* Nucleic Acid Structure and Function
* Gene Expression and Gene Regulation
* Studying and Manipulating Genomes
* Population Genetics
* Evolution and Origin of Species
* Microevolutionary Processes
* Evolutionary Patterns, Rates, and Trends
* Life’s Origin and Early Evolution
* Prokaryotes and Viruses
* Protists
* Plant Evolution
* Plant Tissues
* Plant Nutrition and Transport
* Plant and Animal Diversity
* Population Ecology
* Ecosystem

Course Objectives:

 The Student will:

1. Be able to describe and explain the processes, concepts and principles covered in the above course content.
2. Be able to explain and analyze the relationship between the chemical make-up of living matter and the biological processes characteristic of living organisms.
3. Be able to construct and execute laboratory exercises supportive of course content.

Evaluation:

 Students will be evaluated by some combination of quizzes, tests, exams, and lab reports as defined by the faculty. Since this course supports SCHEV writing competency, it is required that the faculty assign and grade writing assignments in this course.

 All written assignments will be assessed for spelling, punctuation, grammar, and consistency according to the conventions of standard English.

Grading Scale:

 A: 90-100

 B: 80-89

 C: 70-79

 D: 60-69

 F: 0-59

 I: Incomplete

Evaluation System:

The grade for each six weeks in this course will be determined as follows:

Lab/Daily Average: 20% Quiz Average: 30% Test Average: 50%

Each semester grade will be determined by the three six week’s grades and the semester exam weighted 25% each toward the semester grade. Exams will be cumulative for each semester.

Tests: A test will be given at the end of the topic to test the overall understanding of the material. Tests will be announced at least one class session in advance. Unexcused absences during a test will result in a grade of ZERO for that test. You must have a written excuse for the absence to be considered excused. If the absence is excused a makeup test will be given as soon as possible. Whenever possible please inform the instructor of known absences so that pre-arrangements can be made for makeup tests.

 There will be classroom or outside projects assigned that will be graded as a test or two tests depending on the length and type of assignment.

 The format of each test may include the following: multiple choice questions, fill in the blank, matching, short answer and discussions. Test questions may be taken from chapter text, class notes/discussions, similar homework problems, handouts and lab concepts. You are responsible for all of the information related to that topic/chapter.

Quizzes: Quizzes will be given to break up the material into smaller sections. All quizzes will be announced at least one class session in advance and administered at the beginning of the class session.

Homework: Homework will be assigned as necessary in order to emphasize and reinforce a topic. Homework may include reading the text, questions to be answered, or small research/project type activities.

Labs: Laboratory exercises are vital to understanding the field of biology. Laboratory safety rules and procedures will be followed at all times. Lab safety is of the highest priority! Any deliberate disregard for the laboratory safety rules and procedures will cost you of your lab privilege and a grade of zero will be assigned for the lab in which the event occurred. If warranted, other disciplinary action will be determined by the instructor and the director.

 Lab partners will share duties in the lab such as gathering materials, performing the actual steps of the experiment, recording data and cleanup. Any lab area not cleaned sufficiently before the students leave for the day will result in a 10 point penalty on that lab experiment for that lab group.

Lab data obtained during the experiment can be shared among your lab partner and/or assigned group. Copying of another student’s pre-lab assignment will not be permitted. Post-lab analysis and conclusions can be a collaborative effort but all students will be expected to contribute to the discussion. Each student must write their analysis and conclusion in his or her own words.

Any missed labs due to illness or other absence will not be repeated due to time constraints. Therefore, if a student’s absence for a lab is excused a makeup lab report may be assigned on the same subject matter as the lab experiment missed.

Methods: This course will involve the student in an active learning process. As a result, a combination of instructional methods will be utilized. Interactive lectures/discussions will be an integral part of the course. In addition, the student will need to conduct laboratory experiments and work at times as a member of a group to be successful. Other methods of instruction may include group discussions, computer aided exercises, and hands-on activities.

Absences: The PGSMST absence policy will be strictly enforced. It is the student’s responsibility to obtain notes, work and all assignments missed in class during any absence. All students are expected to be prepared for each day regardless of previous class absences. All efforts will be made to accommodate special circumstances should they arise.

Tardies: The PGSMST tardy policy will be strictly enforced. Please remember class starts promptly at 7:45. Three tardies equal one absence, six tardies equal two absences, etc.

Plagiarism: Plagiarism WILL NOT be tolerated! This includes but not limited to giving/receiving answers on tests, quizzes, labs; informing other students in other classes of the content of a quiz or test; and copying information from another person’s paper or research and passing it on as your own work. The internet is a useful tool but information received from sources on the web must be cited properly.

Expectations:

* Each student will be prepared for class, which includes pencil, paper, textbook and/or lab book.
* I will accept late work with a penalty of 15 points for each day it is late! It is due when I ask for it- NOT at the end of the block. At the end of the block, it is late, so 15 points will be deducted!
* I DO NOT tolerate cheating! Anyone caught cheating will receive a ZERO for that assignment, even if it is a test!!!!!!!
* Students are to assume responsibility for any work missed during the absence. It is your responsibility to check with the instructor regarding assignments missed during your absence.
* Each student will adhere to the lab safety rules.
* NO electronic devices will be used during class time. This includes cell phones , ipods, and laptops!! It is disrespectful to me and distracting to your fellow classmates.
* All cell phones will be placed in the basket when you enter the room and may be picked up when you exit the room at the end of class.
* You will respect other people in the room and their opinions.

ADA Accommodations: Every effort will be made to accommodate students with special needs. Please inform the instructor if you need accommodations not currently provided or if the need arises for any special accommodations.

This course supports the following competencies and objectives:

 SCHEV Competencies:

* Writing
* Information Literacy
* Quantitative Reasoning
* Scientific Reasoning
* Critical Reasoning

Educational Objectives:

* Communication
* Learning Skills
* Critical Thinking
* Computational and Computer Skills
* Understanding Science and Technology