

**BIOL 1107 P, Q, R - PRINCIPLES OF BIOLOGY 1 - FALL 2014
SYLLABUS & COURSE POLICIES**

Lecture: Bailey Science Center (BSC) 1023 (M, W, F, 10:00-10:50 a.m.)

Laboratory: All laboratory sections meet in BSC 1085

Section P meets Thurs. 9:30 - 12:20

Section Q meets Thurs. 1:00 – 3:50

Section R meets Friday 11:30- 2:20

Instructor: Dr. Mark Blackmore

Office: BSC 2218

Office Hours: M, W 12:00-12:45 or by appointment

Contact information

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Texts: *Life: The Science of Biology* 10th ed. by Sadava et al.; *Methods and Investigations in Basic Biology* 6th ed. by Goddard. NOTE: This course uses Learning Curve/Launch Pad and you **must** sign-up for access regardless of whether you purchase a hard copy of *Life* or not.

BIOL 1107 Course Description. An introduction to the principles of biology for science majors, with an emphasis on the cellular nature of life. Concepts covered include the origin and early evolution of cellular life; cell structure, function, metabolism, and reproduction; cell signaling; and gene regulation in bacteria and eukaryotes.

There are no prerequisites for this course. BIOL 1100 is a co-requisite for Biology majors.

Learning Goal

Students will demonstrate understanding of the physical universe and the nature of science, and they will use scientific methods and/or mathematical reasoning and concepts to solve problems.

Course scope and objectives: This course is a prerequisite for all other courses required for the biology major. The primary objective is to provide a foundation for further studies in biology. It is also hoped that you will gain an understanding of how biologists and other scientists approach problems.

Course Objectives and Outcomes (refer to General (GEO) & Biology (BEO) Educational Outcomes listed below for more information)

By the end of this course, students will be able to

- 1) answer questions that demonstrate an understanding of fundamental concepts of biology, including the scientific method and experimental design; cellular structure, function, metabolism, and reproduction; the nature of the gene and its action; and the mechanisms of evolution (GEO 5; BEO 1-4)
- 2) perform a variety of standard lab techniques used in biological research (GEO 5)
- 3) use critical thinking skills and written communication skills to present the results and conclusions of data collected in the lab in standard scientific writing format (GEO 4 & 7; BEO 1)

Valdosta State University General Educational Outcomes (GEO)

1. Students will demonstrate understanding of the society of the United States and its ideals.
2. Students will demonstrate cross-cultural perspectives and knowledge of other societies.
3. Students will use computer and information technology when appropriate.
4. Students will express themselves clearly, logically and precisely in writing and in speaking, and they will demonstrate competence in reading and listening.
5. Students will demonstrate knowledge of scientific and mathematical principles and proficiency in laboratory practices.
6. Students will demonstrate knowledge of diverse cultural heritages in the arts, the humanities, and the social sciences.

7. Students will demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written and visual materials.
8. Students will demonstrate knowledge of principles of ethics and their employment in the analysis and resolution of moral problems.

Department of Biology Educational Outcomes (BEO)

1. Develop and test hypotheses, collect and analyze data, and present the results and conclusions in both written and oral format used in peer-reviewed journals and at scientific meetings.
2. Describe the evolutionary process responsible for biological diversity, explain the phylogenetic relationships among the other taxa of life, and provide illustrative examples.
3. Demonstrate an understanding of the cellular basis of life.
4. Relate the structure and function of DNA/RNA to the development of form and function of the organism and to heredity
5. Interpret ecological data pertaining to the behavior of the individual organism in its natural environment; to the structure and function of populations, communities, and ecosystems; and to human impacts on these systems and the environment.

Course requirements & grading policy: Students are expected to attend all scheduled lectures and laboratory sessions. Attendance at lectures will be recorded intermittently after proof rolls have been submitted to the Registrar. Bonus points for attendance (maximum 15) may be applied to the final course grade. Students are responsible for all material presented in class and must attend when tests are given. The Instructor is not obligated to provide lecture notes or handouts to absentee students or to offer make-up examinations. Students with valid, documented excuses (*eg.* a death in the immediate family) may receive special consideration but must contact the instructor immediately. Examinations will cover all material presented in class, any handouts and assigned reading (including material in the textbook not specifically covered in class). Lecture topics will be covered in four one-hour examinations and a comprehensive final examination. I will drop the lowest of the lecture exams and use the scores of the remaining three plus the final exam and laboratory scores to determine the final course grade. Lecture exams may consist of any combination of objective (fill-in, true-false, multiple choice) and subjective (essay, diagrams etc.) questions about material presented in class or in the assigned reading. The final exam will be entirely multiple choice. **The final exam will be given 8:00 – 10:00 a.m. Friday, December 12 in BSC 1023**

Points for the course will be allocated as follows:

4 lecture exams (100 points each) = 400 points

Quizzes (average of pre- and post-chapter scores for each chapter / total possible points) = 100 points

Mandatory comprehensive final exam = 100 points

Laboratory grade (computed as % possible points) = 100 points

The following scale will be used to assign final grades:

| <u>POINTS EARNED</u> | <u>GRADE</u> |
|-------------------------|--------------|
| 630-700 (90-100%) | A |
| 560-629 (80 -89%) | B |
| <u>490-559 (70-79%)</u> | <u>C</u> |
| 420-489 (60-69%) | D |
| < 420 (< 60%) | F |

Important Notes: For Biology majors, a grade of C or higher in this course is required before additional biology courses can be attempted. Thursday, October 9th is the deadline for withdrawing without penalty. Students should receive sufficient feedback to assess their standing in the course at any time. In-progress grades will be calculated using the tests taken (80%) plus the lab grade (20%) prior to September 29.

Special needs: Students with disabilities who are experiencing barriers in this course may contact the Access Office for assistance in determining and implementing reasonable accommodations. The Access

Office is located in Farber Hall. The phone numbers are 229-245-2498 (V) and 229-375-5871 (VP). For more information, please visit <http://www.valdosta.edu/access> or email: access@valdosta.edu

Tentative* Lecture Schedule – Fall Semester 2014

| Week | Dates | Topics | Assigned Reading |
|-------------|-----------------|---|-------------------------|
| 1 | Aug 18 – 22 | Introduction to Biology | Ch 1 |
| 2 | Aug 25 – 29 | Chemistry of Life; Protein, Carbohydrates, Lipids | Ch 2, 3 |
| 3 | Sept 1 – 5 | No class Monday (Labor Day); Nucleic Acids; Cells | Ch 4, 5 |
| 4 | Sept 8 – 12 | Cells; Exam 1 Sept 10 (Ch 1 – 4 + 5 in part) | Ch 5 |
| 5 | Sept 15 – 19 | Cells continued; Cell Membranes | Ch 5, 6 |
| 6 | Sept 22 – 26 | Cell Signaling & Communication; | Ch 7 |
| 7 | Sept 29 – Oct 3 | Energy, Enzymes & Metabolism | Ch 8 |
| 8 | Oct 6 – 10 | Exam 2 Oct 6 (Ch 5 – 8); Pathways that Harvest Chemical Energy | Ch 9 |
| 9 | Oct 13- 17 | Pathways that Harvest Chemical Energy; Photosynthesis; | Ch 9-10 |
| 10 | Oct 20 – 24 | Photosynthesis | Ch 10 |
| 11 | Oct 27 – 31 | Cell cycle & Cell division | Ch 11 |
| 12 | Nov 3 – Nov 7 | Exam 3 Nov 5 (Ch 9 – 12) Inheritance, Genes & Chromosomes | Ch12 |
| 13 | Nov 10 – 14 | DNA & Heredity | Ch 13 |
| 14 | Nov 17 – 21 | From DNA to Protein: Gene Expression | Ch 14 |
| 15 | Nov 24 – 28 | Thanksgiving Holiday | |
| 16 | Dec 1- 5 | Gene Mutation & Molecular Medicine; Exam 4 Dec 5 (Ch 13 – 15) | Ch 15 |
| 17 | Dec 8 – 12 | Last class Dec 8; Final Exam Friday Dec. 12 8:00 – 10:00 am | |

***This schedule is tentative. Pacing and test dates may be changed as necessary, but no exam will be given prior to the date indicated here. Attendance in class is encouraged to stay abreast of any changes.**

Academic Integrity & Conduct: I follow the Academic Honesty Policies and Procedures of the University www.valdosta.edu/academic/AcademicHonestyPoliciesandProcedures.shtml and the Department of Biology’s Policy on Plagiarism www.valdosta.edu/biology/documents/biologyplagiarism.doc. I expect my students to read and understand the information provided on those web sites - there will be questions on exams regarding the information provided there. “Academic Integrity/ Honesty” means performing all academic work without plagiarism, cheating, lying, tampering, stealing, receiving unauthorized or illegitimate assistance from any other person, or using any source of information that is not common knowledge. All electronic devices including cell phones must be turned off and kept out of sight during examinations.

Student conduct should follow guidelines specified in the VSU Student Handbook. It is expected that students will maintain the highest ethical standards, honesty and courtesy at all times. To avoid disruptions, all cellular telephones should be turned off for the duration of class. Students failing to abide by this policy may face disciplinary action. Evidence of dishonesty in the completion of assignments or during tests will result in the forfeiture of the points allocated for that task. Any student caught cheating may be reported to the University Administration. A second offense will be grounds for dismissal with a failing grade.

FALL 2014- Tentative Laboratory Schedule, BIOL 1107 P, Q, R

LABORATORY EXERCISES:

| Week | Lab Days: | Topic: | Assignments Due* |
|------|-----------------|--|--|
| 1 | August 21/22 | Laboratory Introduction; Ex. 1 Use of Scientific Method | Quiz 1 |
| 2 | August 28/29 | Ex. 2 Basics of the Light Microscope | Quiz 2 |
| 3 | September 4/5 | Discuss & Plan for Ex. 4 | |
| 4 | September 11/12 | Ex. 3 Observation of Living Cells with Light Microscope | Quiz 3 Independent. Project Proposal |
| 5 | September 18/19 | Ex. 5 Cellular Water Relations | Quiz 4 |
| 6 | September 25/26 | Ex. 4 Independent Group Microscopy Project: Data collection lab | Quiz 5 |
| 7 | October 2/3 | Ex. 6 Protein extraction & quantification | Quiz 6 Independent Project Report |
| 8 | October 9/10 | Ex. 7 Enzymology: α -amylase activity | Quiz 7 |
| 9 | October 16/17 | Ex. 8 Enzymology: Investigation of the effects of temperature on enzyme activity | Quiz 8 |
| 10 | October 23/24 | Ex. 9 Photosynthesis | Quiz 9 |
| 11 | October 30/31 | Ex. 10 Cell reproduction: Mitosis, Meiosis, & Cytokinesis | Quiz 10 |
| 12 | November 6/7 | Ex. 11 Isolation of plasmid DNA | Quiz 11 |
| 13 | November 13/14 | Ex. 13 Genetically Modified Organisms | Quiz 12 |
| 14 | November 20/21 | Ex. 14 pGLO Transformation | |
| 15 | November 27/28 | Thanksgiving Holiday | |
| 16 | December 4/5 | Finish pGLO | |
| 17 | December 8-12 | No Labs – Final Exam Week | |

*At the end of each lab, each student must have completed all data tables and graphs in the Lab Manual and get them signed off by the instructor. Homework assigned must be completed and turned in at the beginning of the next lab.