

BIOL 1107K: Principles of Biology I
Summer II Semester 2014, 4 Credit hours (weekly: 3 hr lecture, 3 hr lab)
Department of Biology, College of Arts & Science, Valdosta State University

Lecture (BC 2022): T R 9:35 a.m. – 12:35 p.m.
Laboratory (BC 1083): Section B (CRN #50400): T & R / 1:00 p.m. - 3:50 p.m.

Instructor: Dr. Brian C. Ring

Office: BC 2084

Office hours: T R 12:35 p.m. – 1:00 p.m. (after lecture)

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Pre-Requisites: None. Note this course is for science majors.

Co-Requisites: BIOL 1100, Biology Freshmen Seminar.

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.

Course Objectives: Upon completion of this course the student should be able to:

- 1) Exhibit a broad perspective on the principles unifying various biological disciplines from evolution to molecular biology (DBEO 2 & 5);
- 2) Understand basic biological chemistry from elements to organic compounds to macromolecules;
- 3) Comprehend basic principles of biology at the cellular level to include structure, function, metabolism, communication, reproduction, molecular biology, and gene expression (DBEO 3 & 4);
- 4) Perform, analyze, interpret, and report laboratory experiments (DBEO 1);
- 5) Develop and test a hypothesis using experimental microscopy and quantitative skills acquired in the laboratory (DBEO 1 & 5).

These objectives support the Department of Biology Educational Outcomes # 1-5 listed above (DBEO 1-5) and the University General Educational Outcomes # 5 as listed in the VSU Undergraduate Catalogue.

Required Materials:

Text: Sadava, D., H. C. Heller, G. H. Orians, W. K. Purves, D. M. Hillis. 2008. Life: The Science of Biology. 10th edition. Sinauer Associates Inc., Sunderland, MA and W.H. Freeman & Co. Gordonsville, VA.

Laboratory Manual: Goddard, R.H. 2004. Methods and Investigations in Basic Biology, 3rd ed. Cengage Learning

Clickers: Each student is required to obtain a Turning Technologies NXT clicker (available in the bookstore) and connect your clicker to the course D2L Blazeview website. All students are responsible for having their clickers with them in lecture and laboratory. All points accumulated during lecture are generated by clickers as well as laboratory quizzes (when feasible). If you do not bring your clicker, no points will be recorded for your participation. Clicker info at:

<http://www.valdosta.edu/distance/clickers/index.shtml>.

Graded Course Components: Your final grade will be based primarily on your performance on lecture clicker quizzes, examinations and the laboratory. Additional summative exercises will be executed during lecture requiring individual and group effort to prepare you (the student) for lecture exams (formative assessment).

Lecture: (75%) There will be lecture “clicker” quizzes and 4 lecture exams covering sequential material as outlined below. Due to the accelerated pace of the summer semester this exam schedule equates to one exam every other week. Students are required to read assigned text to prepare for lecture quizzes before coming to class. Lecture and quizzes are designed to prepare you for exams. Related information presented in the laboratory may also be included in these exams. Exams will be primarily composed of multiple choice and short answer. Each of the exams and quizzes are scaled to 100 points and averaged. Lecture Exam 4 will be taken during the allotted Final Exam time specified for summer session II (see below). **There are NO MAKEUP EXAMS.**

Laboratory: (25%) Students will be graded on their performance in laboratory based on attendance, participation, quiz grades (paper and/or clicker), group lab projects, and other assignments. As the

BIOL 1107K course syllabus: Page 2

laboratory is considered an extremely important part of this course, any **student missing more than 3 laboratory sessions will automatically receive an F. There are NO MAKEUP LABS.** The laboratory grade is adjusted to 100 percentage points (see below lab schedule).

Grade Assessment:

Calculate your overall grade as follows:

(Lab average grade X .25) + (4 lecture exams + 1 quiz average grade/5 X .75) = Overall percentage grade.

Overall letter grades will be assigned on a 10 point scale: 90-100% = A, 80-89% = B, 70-79% = C, 60-79% = D and, 59% and below = F.

Notes on grading philosophy: Students should note that a grade of "A" in this course represents an exemplary command of the material. To obtain this grade of excellence, it is recommended that students study daily and clarify with the professor any problems regarding course information, as they arise. Additionally, the instructor may implement a curve based on the overall class performance at the end of the course.

Mid-term, or in-progress grades: The instructor is required to submit in-progress grades prior to mid-term (7/3/14). In theory, a mid-term grade is necessary for a student to assess how s/he is doing in class by midterm. In this course, students will have feedback on at least one major exam by midterm, several lab quizzes, lab assignments, and any homework or writing assignments. I will, in general, assign an overall average grade at this point on the normal scale of A-F viewable on Banner. Students receiving a grade of "D" or lower should therefore carefully evaluate their option of dropping this course by midterm without academic penalty.

Attendance: Attendance in this course is absolutely required. Students should be seated at the beginning of class. If you are late, your attendance may not be acknowledged. Attendance may be taken at any time during the lecture and/or by use of clicker. The student is responsible for all material missed regardless of the reason for absences. **ABSOLUTELY NO LECTURES OR LABORATORIES CAN BE "MADE UP."** Laboratories in particular are important not to miss as stated above. In the event that a student will miss a lab, s/he should notify the instructor in writing by email. It is the instructor's prerogative to accept the excuse or not.

EXAM SCHEDULE:

Exam 1:	Tuesday, June 24, 2014
Exam 2:	Tuesday, July 08, 2014
Exam 3:	Thursday, July 17, 2014
Exam 4:	Wednesday, July 30, 2014; 10:15 a.m. – 12:15 p.m.

NOTE: You will have the class time only to complete each lecture exam.

Privacy Act (FERPA): The Family Educational Rights and Privacy Act (FERPA) prohibit the public posting of grades by social security number or in any manner personally identifiable to the individual student. No grades can be given by email or over the telephone, as positive identification can not be made by this manner. Grades will be posted through BlazeView course website.

Disruptive behavior: No disruptive behavior of any kind will be tolerated in this course. Students should restrict talking and discussion to pertinent questions related to course material and these questions should be directed toward the instructor. Entering a classroom late or early is discouraged. Any student disrupting lectures will be required to leave the classroom. Use of cellular telephones, pagers, or any similar remote communication device is prohibited during scheduled lectures, laboratories, or examinations. If students bring cellular telephones or similar devices to lecture, it is their responsibility to switch them off prior to the beginning of the lecture period.

Biology Tutoring: The Student Success Center (SSC) at Valdosta State University is located in Langdale Residence Hall above the Tech Shop and is available to all students. The SSC provides free peer tutoring in core curriculum courses, including biology, chemistry, math, writing, and foreign languages. The SSC also provides free professional academic advising and on-campus job information in one location. Call 333-7570 to make an appointment, or visit the website: www.valdosta.edu/ssc.

Students with Disabilities: Students requesting classroom accommodations or modifications due to a documented disability must contact the Access Office for Students with Disabilities located in the Farber Hall. The phone numbers are 245-2498 (V/VP) and 219-1348 (TTY).

TENTATIVE LECTURE OUTLINE:

Lecture:	Date:	Topics:	Text Readings (pgs):
1	June 12 (R)	Course Introductions What is science? What is Biology? Unifying Principles...	Chpt. 1 (1.2) Chpt. 1 (1.1), Suggested: Evolution (21.1) Phylogeny (22.1) Species Concept (23.1) Nomenclature (22.4)
2	June 17 (T)	Basic Chemistry, water, & pH Organic Molecules	Chpt. 2 (2.1-2.4) Chpt. 3 (3.1)
3	June 19 (R)	Major Macromolecules: Proteins, Carbohydrates, Lipids, & Nucleic Acids Review	Chpt. 3 (3.2-3.4) Chpt. 4 (4.1)
--	June 24 (T)	EXAM # 1	Lecture material 1-3
4	June 26 (R)	Basic Unit of Life: Cells Cell Membranes: Principles & Transport	Chpt. 5 (5.1-5.4) Chpt. 6 (6.1-6.6)
5	July 01 (T)	Cell Signaling & Communication Energy, Enzymes, & Metabolism	Chpt. 7 (7.1-7.4) Chpt. 8 (8.1-8.5)
6	July 03 (R)	Catch Up & Review Midterm; Last day to drop without penalty	
--	July 08 (T)	EXAM # 2	Lecture material 4-6
7	July 10 (R)	Cellular Respiration Photosynthesis	Chpt. 9 (9.1-9.5) Chpt. 10 (10.1-10.4)
8	July 15 (T)	Continued Catch Up & Review	
--	July 17 (R)	EXAM # 3	Lecture material 7-8
9	July 22 (T)	Cellular Reproduction: Mitosis & Meiosis Molecular Biology I: DNA Structure and Replication	Chpt. 11 (11.1-11.5) Chpt. 13 (13.1-13.4)
10	July 24 (R)	Molecular Biology II: RNA Transcription & Protein Synthesis Catch Up & Review	Chpt. 14 (14.1-14.5)
--	July 30 (W)	EXAM # 4; 10:15 – 12:15 (BC 2022) Please let me know of conflicts with other courses!	Lecture material 9-10

NOTES: To be most successful with the above lecture schedule, you must read the text prior to lecture. I recommend bringing powerpoint slides to lecture as we discuss the material as a means of note taking (available on D2L Blazeview). Both combined will help you be prepared for lecture quizzes and exams. Other in class assignments will be provided to help you learn the material at the required level of cognition so you will be well prepared!

TENTATIVE LABORATORY EXERCISES:

Lab	Day:	Topic:
1	June 12 (R)	Introduction to the Lab, Safety, and Laboratory Notebooks
2	June 17 (T)	Exercise 1: Introduction to the Use of the Scientific Method
3	June 19 (R)	Exercise 2: Basic Light Microscopy
4	June 24 (T)	Exercise 3: Light Microscopy Observations of cells and organisms; Basic "5 Kingdom" levels of organization.
5	June 26 (R)	Exercise 4: Group Microscopy Project: Proposal Discussion A1 Due: Group Proposal (end of class), read Appendix A
6	July 01 (T)	Exercise 4 Cont'd: Independent Microscopy Project: Data collection lab; Distribution of microscopic flora and fauna. A2 Due: Exercise 4, Summary of Group Results (end of class), see Appendix B (lab manual) N1: Notebook check # 1
7	July 04 (R)	NO LAB- July 4 th Holiday
8	July 08 (T)	Exercise 5: Cellular Water Relations
--	July 10 (R)	Exercise 6: Protein extraction & Quantification from living tissues Read Appendix C & D (lab manual)
9	July 15 (T)	Exercise 7: Enzymology Lab: basics of α -amylase activity A3 Due: Group Research Paper (Exercise 4)
10	July 17 (R)	Exercise 8: Enzyme Regulation: Investigation of the effects of temperature and pH on α -amylase activity
11	July 22 (T)	Exercise 10: Cellular Reproduction DAY 1 of 2: Exercise 14: Bacterial Transformation of Recombinant Green Fluorescent Protein (GFP) N2: Notebook check # 1
12	July 24 (R)	DAY 2 of 2: Finish above.

Summary of Laboratory Grade (100 points):

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	A1	A2	A3	N1	N2	P	Total
20	20	20	20	20	20	20	20	20	20	20	20	40	25	25	25	y
																x

Q= Laboratory Quiz, **A=** Laboratory Assignment in or outside of class, **N=** Laboratory Notebook Check, **P=** Participation

Your laboratory grade is computed as a percentage of your total points (x) from the total possible (y), where $(x / y) \times 100 =$ laboratory percentage (Note: total subject to change). Use the empty third row in the table above to keep track of your individual points and lab percentage at any point in the semester. Quizzes are given weekly at the beginning of lab during the first 20 minutes. You will have only the time allotted at the beginning of lab to take the quiz. No make-up quizzes allowed. Assignments are listed in the above Laboratory Exercises as A1-A4 along with a description. Notebook checks are listed twice during the semester and are performed during class time or at the discretion of your instructor(s). Participation is awarded based on continuous effort of the student both individually and as a group member as observed by the instructor.