

Valdosta State University

BIOL 1107: Principles of Biology I (Lecture and Lab syllabus) Fall 2011

Lecture (BC 1023): MWF 9:00-9:50 a.m
Laboratory (BC 1083): Sections V, W, X

Instructor: Dr. Eric W. Chambers

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Phone: TBA

E-mail: ewchambers@valdosta.edu

Office hours: Tuesday and Thursday 10-11 am; or by appointment

Text:

- Sadava, A., H. C. Heller, G. H. Orians, W. K. Purves, D. M. Hillis. 2011. Life: The Science of Biology. 9th edition. W.H. Freeman & Co. Gordonsville, VA.
- Goddard, R. H. 2010. Methods and Investigations in Basic Biology. 4th edition. Hayden-McNeil Publishing, Plymouth, Michigan.

Course Description: An introduction to the principles of biology for science majors, with an emphasis on the cellular basis of life, genetics, and evolution. Concepts the course will focus on will include (but not be limited to): the origin and early evolution of cellular life; cell structure, function, metabolism and reproduction; cell signaling; and gene regulation in bacteria and eukaryotes.

Course goals: The purpose of this course is to provide you with a broad introduction to the study of biology. The course is introductory and topical in nature but upon completion of this course you will be prepared for advanced specialized courses in biology. It will also provide you with a background to better understand many of the technological issues and challenges confronting our nation and the world.

This course will assist you in developing communication skills as well as information processing skills. These abilities are critical for all students, both those who wish to attend professional school (medical, dental, etc.) and graduate school as well as those who will move directly into the job market following graduation. Your critical thinking skills will be enhanced through analysis of lab exercises, class assignments, and test questions.

Educational outcomes: Listed at the end of syllabus

Attendance: Attendance in lecture is expected by all students. Attendance in laboratory is mandatory; see lab policy below.

Lecture Conduct:

- Arrive on time.
- Turn off/silence cell phones during class and lab.
- Don't talk during lecture; if you don't understand something or didn't hear something ask.
- Unless it's an emergency (and using your cell phone does not constitute an emergency) do not get up in the middle of lecture, leave and come back.
- **Do not leave class early** unless it's an emergency.
- During exams NOBODY can leave the exam and re-enter the exam room. If a student leaves, their exam will be graded as is; the student will not be allowed to finish the exam.

Lab Conduct

- Arrive on time. If you are late and the quiz has started, you will be given no additional time to complete it.
- It is strongly advised to maintain a laboratory notebook with drawings, descriptions, data, etc. of the laboratory exercises. The notebook will help you study for the quizzes.
- No eating or drinking during the lab.
- Students must take care of lab equipment. Notify the professor if something is not working properly or if something breaks during the course of the lab.
- Students will be assigned a microscope. It is the student's responsibility to properly use the microscope. After lab the professor will check each scope to make sure that it was put away properly. Failure to do so will result in one (1) point being subtracted from the student's total lab points (not the final percentage) each week it is not put away properly. Notify the professor if your microscope is not functioning properly.
- Cell phones are not to be used in lab with the exception of using them as timers when necessary. Do NOT text during labs!

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.

Withdrawing from the course: The last day to withdraw without penalty is October 6, 2011. If you don't officially withdraw, and instead just stop coming to class, you will receive an F for the course.

Academic conduct: Cheating and plagiarism will not be tolerated and may result in a failing grade for the assignment, exam or the class. The Department of Biology has a plagiarism policy, which will be handed out during the first lab period.

Student identification: Students should have in their possession at all times their VSU student identification card. In order to verify the identification of students officially enrolled in the course, it is the instructor's prerogative to request official student photo identification cards at any time during lecture. During examinations, students will routinely be asked to display their VSU student identification cards visibly on the desktop and to make them available for inspection by their instructor and/or assistants.

Privacy Act (FERPA): The Family Educational Rights and Privacy Act (FERPA) prohibits the public posting of grades by social security number or in any manner personally identifiable to the individual student. No grades can be given over the telephone or over email because positive identification can't be made.

Students with disabilities: Students requiring special accommodations because of disability should discuss their needs with me as soon as possible. Those needing accommodations that are not registered with the Special Services Program must contact the Access Office for Students with Disabilities located in Farber Hall. The phone numbers are 245-2498 (voice) and 219-1348 (tty).

Procedure for exams:

- No books, electronic devices, or notebooks will be allowed during exams and students using such items will be asked to leave and will receive a zero for the exam.
- No talking will be allowed during the exam, but students are permitted to ask the instructor questions.
- Each student will be given an exam to be completed and handed back to the instructor.
- Students must bring a pencil and will take the exam during the stated lecture time only.
- **NOTE:** You will have the class time only to complete each lecture exam.

Grade Assessment: Your final grade will be based on your performance on lecture examinations and the laboratory. Additional unannounced research and writing assignments may be assigned to count toward the final grade during the semester.

Lecture: (500pts)

Exams. There will be four lecture exams followed by a cumulative final. Students are required to learn the lecture material and the readings from the text for all exams. Related information presented in the laboratory may also be

included in exams. Your instructor will specify exam format. The unit exams are not cumulative. Each of the unit exams and the cumulative final exam will be worth 100 points. The final exam will be taken during the allotted time published online and posted below. **There are NO MAKEUP EXAMS**, with the exception of those students with a University related excuse or an emergency. Otherwise, a missed exam will be equal to zero points.

Laboratory: (158 pts) Students will be graded on their performance in laboratory based on attendance, quiz grades, group lab projects, selected homework assignments, and other assignments as specified by your instructor. **There are NO MAKEUP LABS.**

Lab Quizzes: Quizzes (worth 9 points each) are given weekly during the first 10 to 15-minutes of each laboratory. **DO NOT BE LATE.** You will not be allowed extra time if you are late. If you miss the quiz completely, you will receive a zero for the quiz. Some of the questions will cover the procedures and results of the previous week's exercises. Other questions will pertain to procedures for the upcoming lab. You may use your lab notebook for the quizzes.

Lab Assignments: Information for each assignment will be provided in lab.

Group Microscope Project: Each lab group will develop and complete an experiment and write a summary of the group lab results in standard scientific format. Further information will be provided in lab. All students are required to complete this assignment.

Laboratory Notebook: Each member of a lab group should actively participate in the lab work and should keep a well-organized notebook of his or her lab work. Notebooks can be used during the lab quizzes. More information will be provided in lab.

Grade Assessment:

To assess your lecture grade divide the total points earned by the total possible points & multiply by 100.

Table 1.

Exam 1	Exam 2	Exam 3	Exam 4	Final Exam	Total
100	100	100	100	100	500

Use the empty second row in the table above to keep track of your individual points and lecture percentage at any point in the semester.

To assess your lab grade divide the total points earned by the total possible points & multiply by 100.

Table 2.

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	A 1	A 2	A 3	Tota
9	9	9	9	9	9	9	9	9	9	9	9	20	15	15	158

Q= Laboratory Quiz, A= Laboratory Assignment in or outside of class

Use the empty second row in the table above to keep track of your individual points and lab percentage at any point in the semester.

To assess your final grade add the points earned in lecture (Table 1) with the points earned in lab (Table 2) and divide the total by the total possible points. Then multiply by 100.

Table 3.

Lecture Points	Lab Points	Total
158	500	658

Grade Calculation & Distribution:

Grade Calculation		Grade Distribution		
Type	Points	Letter	Percentage	Point Range
Exam 1	100	A	90-100%	592-658
Exam 2	100	B	80-89%	526-591
Exam 3	100	C	70-79%	460-525
Exam 4	100	D	60-69%	394-459
Final Exam	100	F	≤ 59%	≤ 394 points
Laboratory	158			
Total	658			

Notes on grading: Students should note that a grade of "A" in this course represents an exemplary command of the material covered. To obtain this grade of excellence, it is recommended that students study daily and clarify with their instructor any problems regarding course information, as they arise.

Those students with other laboratory instructors can calculate your overall grade as follows:

(Lab percentage grade X 0.25) + (lecture percentage grade X 0.75) = Overall percentage grade

Mid-term, or in-progress grades: The instructor is required to submit in-progress grades prior to mid-term as posted (9/29/11). 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. The instructor 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 Policy: Attendance in this course is highly recommended, unless you are sick. Students should be seated at the beginning of class. If you are late, your attendance may not be acknowledged. 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 within 24 hours of the missed lab. It is the instructor's prerogative to accept the excuse or not. Attendance will be recorded for lab sessions using the lab quiz. Students who miss two labs without an excuse or three labs total cannot receive a grade above a "D".

TENTATIVE LECTURE OUTLINE

Lecture	Date	Topics	Chapters
1	August 15 (M)	Introduction to Biology	1
2	August 17 (W)	Introduction to Biology	1
3	August 19 (F)	Introduction to Biology; Chemistry of Life	1-2
4	August 22 (M)	Chemistry of Life	2
5	August 24 (W)	Chemistry of Life	2
6	August 26 (F)	Chemistry of Life; Macromolecules	2-3
7	August 29 (M)	Macromolecules & Origin of Life	3-4
8	August 31 (W)	Origin of Life	4
9	Sept. 2 (F)	Cells	5
--	Sept. 5 (M)	Labor Day Holiday; No class	
10	Sept. 7 (W)	Cells	5
--	Sept. 9 (F)	EXAM # 1	1-5
11	Sept. 12 (M)	Cells; Cell Membranes	5-6
12	Sept. 14 (W)	Cell Membranes	6
13	Sept. 16 (F)	Cell Membranes	6
14	Sept. 19 (M)	Cell signaling & Communication	7
15	Sept. 21 (W)	Cell Signaling & Communication	7
16	Sept. 23 (F)	Energy, Enzymes, & Metabolism	8
17	Sept. 26 (M)	Energy, Enzymes, & Metabolism	8
18	Sept. 28 (W)	Pathways that Harvest Chemical Energy	9
19	Sept. 30 (F)	Pathways that Harvest Chemical Energy	9
20	Oct. 3 (M)	Pathways that Harvest Chemical Energy; Exam 2 Review	9
--	Oct. 5 (W)	EXAM # 2	5-9
21	Oct. 7 (F)	Photosynthesis	10
22	Oct. 10 (M)	Photosynthesis	10
23	Oct. 12 (W)	Photosynthesis; The Cell Cycle, and Cell Division	10-11
24	Oct. 14 (F)	The Cell Cycle, and Cell Division	11
25	Oct. 17 (M)	The Cell Cycle, and Cell Division; Inheritance, Genes, and Chromosomes	11-12
26	Oct. 19 (W)	Inheritance, Genes, and Chromosomes	12
27	Oct. 21 (F)	DNA and Role in Heredity	13
--	Oct. 24 (M)	Fall Break; no class	
28	Oct. 26 (W)	DNA and Role in Heredity	13

29	Oct. 28 (F)	DNA to protein: Gene Expression	14
30	Oct. 31 (M)	DNA to protein: Gene Expression	14
31	Nov. 2 (W)	Gene Mutation & Molecular Medicine	15
32	Nov. 4 (F)	Gene Mutation & Molecular Medicine; Exam 3 Review	15
--	Nov. 7 (M)	EXAM # 3	10-15
33	Nov. 9 (W)	Regulation of Gene Expression	16
34	Nov. 11 (F)	Regulation of Gene Expression; The Eukaryotic Genome	16-17
35	Nov. 14 (M)	The Eukaryotic Genome	17
36	Nov. 16 (W)	Recombinant DNA & Biotechnology	18
37	Nov. 18 (F)	Recombinant DNA & Biotechnology	18
38	Nov. 21 (M)	Differential Gene Expression in Development	19
--	Nov. 23 (W)	Thanksgiving Holiday; No classes	
--	Nov. 25 (F)	Thanksgiving Holiday; No classes	
39	Nov. 28 (M)	Development and Evolutionary Change	20
40	Nov. 30 (W)	Development and Evolutionary Change; Exam 4 Review	20
--	Dec. 2 (F)	EXAM # 4	16-20
--	Dec. 5 (M)	Review	
--	Dec. 8 (R)	FINAL EXAM	1-20

Tentative Laboratory Schedule, BIOL 1107, Sections V,W,X - FALL 2011

LABORATORY EXERCISES

Lab	Week of	Topic:
1	August 15	Laboratory Introduction Ex. 1 Introduction to the Use of the Scientific Method
2	August 22	Ex. 2 Basics of the Light Microscope.
3	August 29	Ex. 3 Observation of Living Cells with Light Microscopy
4	September 5	Ex. 4 Independent Group Microscope Project: Proposal
5	September 12	Ex. 4 Independent Group Microscopy Project: Data collection lab
6	September 19	Ex. 5 Cellular Water Relations
7	September 26	Ex. 6 Protein extraction & quantification
8	October 3	Ex. 7 Enzymology: α -amylase activity
9	October 10	Ex. 8 Enzymology: Investigation of the effects of temperature on enzyme activity
--	October 17	Ex. 9 Photosynthesis
10	October 24	Fall Break – No Lab
11	October 31	Ex. 10 Cell reproduction: Mitosis, Meiosis, & Cytokinesis
12	November 7	DNA fingerprinting & Ex. 12 PCR-Based VNTR Human DNA Typing
13	November 14	Ex. 13 Genetically Modified Organisms part 1
--	November 21	Thanksgiving Holiday – No Lab
14	November 28	Ex. 13 GMO part 2

VALDOSTA STATE UNIVERSITY GENERAL EDUCATIONAL OUTCOMES (GEO)

1. Students will demonstrate understanding of the society of the United States and its ideals. They will possess the requisite knowledge of the society of the United States, its ideals, and its functions to enable them to become informed and responsible citizens. They will understand the connections between the individual and society and the roles of social institutions. They will understand the structure and operational principles of the United States government and economic system. They will understand United States history and both the historical and present role of the United States in the world.

2. Students will demonstrate cross-cultural perspectives and knowledge of other societies. They will possess sufficient knowledge of various aspects of another culture, including the language, social and religious customs, aesthetic expression, geography, and intellectual and political history, to enable them to interact with individuals within that society from an informed perspective. They will possess an international viewpoint that will allow them to examine critically the culture of their own nation and to participate in global society.

3. Students will use computer and information technology when appropriate. They will demonstrate knowledge of computer concepts and terminology. They will possess basic working knowledge of a computer operating system. They will be able to use at least two software tools, such as word processors, spreadsheets, database management systems, or statistical packages. They will be able to find information using computer searching tools.

4. Students will express themselves clearly, logically and precisely in writing and in speaking, and they will demonstrate competence in reading and listening. They will display the ability to write coherently in standard English; to speak well; to read, to understand, and to interpret the content of written materials in various disciplines; and to listen effectively and to understand different modes of communication.

5. Students will demonstrate knowledge of scientific and mathematical principles and proficiency in laboratory practices. They will understand the basic concepts and principles underlying scientific methodology and be able to collect, analyze, and interpret data. They will learn a body of scientific knowledge and be able to judge the merits of arguments about scientific issues. They will be able to perform basic algebraic manipulations and to use fundamental algebraic concepts to solve word problems and equations. They will be able to use basic knowledge of statistics to interpret and to analyze data. They will be able to evaluate arguments based on quantitative data.

6. Students will demonstrate knowledge of diverse cultural heritages in the arts, the humanities, and the social sciences. They will develop understanding of the

relationships among the visual and performing arts, literature and languages, and history and the social sciences. Students will be versed in approaches appropriate to the study of those disciplines; they will identify and respond to a variety of aesthetic experiences and engage in critical thinking about diverse issues. They will be able to identify the components of and respond to aesthetic experiences in the visual and performing arts. They will develop knowledge of world literature within its historical and cultural frameworks. They will understand modern issues within a historical context and the role of the individual in various forms of societies and governments.

7. Students will demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written and visual materials. They will be skilled in inquiry, logical reasoning, and critical analysis. They will be able to acquire and evaluate relevant information, analyze arguments, synthesize facts and information, and offer logical arguments leading to creative solutions to problems.

8. Students will demonstrate knowledge of principles of ethics and their employment in the analysis and resolution of moral problems. They will recognize and understand issues in applied ethics. They will understand their own value systems in relation to other value systems. They will judge values and practices in a variety of disciplines.

9. 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.

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.

Directions to Dr. Chambers's office:

