

BIOL 1107K, Principles of Biology I **Spring Semester, 2014 Sections A, B, C, D, E, F**

Lecture (BC 1011):	TR	8:00 a.m. - 9:15 a.m.	
Laboratory (BC 1083):	Section A (CRN 21915; Nienow):		Mon.: 9:00 a.m. – 11:50 a.m.
	Section B (CRN 21916; Kang):		Mon.: 1:00 p.m. – 3:50 p.m.
	Section C (CRN 21917; Nienow):		Tues.: 9:30 a.m. - 12:20 p.m.
	Section D (CRN 21918; Calestani):		Wed.: 9:00 a.m. – 11:50 a.m.
	Section E (CRN 21919; Calestani):		Wed.: 1:00 p.m. – 3:50 p.m.
	Section F (CRN 21920; Shah):		Thurs.: 9:30 a.m. – 12:20 p.m.

Instructor: Dr. Russ Goddard, BC 2090. (Phone 249-2642; or Dept. office 333-5759)
(Office hours: TR 9:30 – 11:30 a.m.)
Official Contact email: rgoddard@valdosta.edu

Course Catalog Description: BIOL 1107 Principles of Biology I; 3-3-4; Co-requisite for biology majors: BIOL 1100.
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.

Required Materials:

Text: Sadava, D., D.M. Hillis, H.C. Heller, and M.R. Berenbaum. 2014. Life: The Science of Biology. 10th edition. Sinauer Associates Inc., Sunderland, MA.

Note: There is a **GRADED** component to this course using the interactive quizzing software (Learning Curve) available through the publisher's web page called BioPortal

There are three versions of the text book that students may choose to purchase (purchase just one!):

1. The ebook alone available through the publishers web site (https://purchase.bfwpub.com/purchase/transaction/transaction.php?productId=life10e_p) . The cost for this should be about \$95.00 but access is only good for two years.
2. The loose leaf version of the Sadava Text in the VSU Bookstore (9781464141669)
3. The hard back version of the Sadava Text in the VSU Bookstore (9781464141652)

Options 2 & 3 have a portal access code included with the book. Do Not Purchase a used book if you are looking to complete all graded components of the course.

Publisher's BioPortal Web Page Access: <http://courses.bfwpub.com/life10e.php>.

Student Instructions for accessing BioPortal:

1. Go to <http://courses.bfwpub.com/life10e> (Mac users need to use Firefox).
2. Click on the link "REGISTER AN ACTIVATION CODE."
3. Your students will be prompted to follow the on-screen instructions to find your course. They will start by selecting the school's state/province, the school name, then their instructor, course, and/or section.
4. Your students will enter the activation code that came with their textbook or that they purchased from us. They will also be asked to enter their email address, choose a password and they will be ready to go!
5. Your students can also purchase access on the website by clicking on the "PURCHASE" link.

Laboratory Manual: Goddard, R.H. 2013. Methods and Investigations in Basic Biology, 6th ed. Hayden-McNeil Publishing, Plymouth, MI.

"Clickers": Each student is required to obtain a Turning Technologies NXT clicker (available in the bookstore). All students are responsible for having their clickers with them in class. All points accumulated in lecture are generated by clickers. If you do not bring your clicker, no points will be recorded for your participation ☹. Clicker info at: <http://www.valdosta.edu/academics/elearning/documents/nxt-student-response-guide.pdf>. Assistance for clicker problems is available in the eLearning office (behind the help desk) in the Odum Library.

Additional Course Materials on the WWW: <http://www.valdosta.edu/~rgoddard/> or the BlazeView D2LCourse Page.

General Objectives: This course provides an introduction to basic principles of biology. An emphasis on topics encompassing cell structure and function, metabolism, cell reproduction, gene structure and function, genetics, and evolution as unifying principles of all life. The goal of this course is to stimulate student learning of these basic concepts and to encourage contemplation of the significance of each concept to the complexity of life. Specific course learning objectives addressed in this course that are aligned with Department and University learning objectives (listed at the end of this syllabus) include BIOL objectives 1 through 5 and VSU objectives 3-5 and 7-8. As aligned with our new core curriculum (<http://www.valdosta.edu/academic/VSUCore.shtml>), 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.

Attendance: Attendance in this course absolutely is required. Students should be seated at the beginning of class. Attendance is recorded through the use of clickers. Arriving late disrupts class and the student may be asked to leave. 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. In the event that a student will miss a class, s/he should notify the instructor in writing by email BEFORE the missed class but any points assessed during the missed class will be forfeit.

Graded Course Components: Your final grade will be based on your performance in the following course components: Additional unannounced in-class assignments may count toward the final grade during the semester.

Lecture (400 pts): There will be 3 lecture exams and a mandatory comprehensive final exam given on the dates listed below. Students are required to know the lecture material and the readings from the text for exams and quizzes. Information presented in the laboratory may also be included in these exams. Each exam is 100 pts. Clicker response systems are necessary for exams.

Lecture "Clicker" grade (100 pts): During this course the instructor will be using "clicker" technology to better engage students in the learning process and to facilitate rapid feedback for exams. For each clicker question presented in lecture, a point value will be assigned. Clicker questions will or can be presented throughout the lecture class period. Additionally, longer lecture "pop" quizzes will be given using clicker input. All responses to questions presented during lecture will be compiled at the end of the course. The grade for this component will be the number of questions answered correctly divided by the number of points available times 100 (points correct/points possible x 100). The final computed pop-quiz grade is the only grade that might be significantly scaled to adjust for overall class performance! For any absence, pop-quizzes can never be made up and all points will count for all students. *Due to the size of this class, any student without a "clicker" will not have their responses recorded and there is no way to circumvent this. It is the student's responsibility to bring their properly operating clicker with them to every lecture to insure that their points are recorded.*

Learning Curve (Publisher BioPortal Homework; 100 pts): In a college class, particularly in one for majors, we expect mastery of the subject and a high level of discipline from the student. Some students have performed poorly in the past under the more rigorous expectations they are required to meet in college. Learning curve assignments will be placed on BioPortal for each chapter the instructor will be covering in lecture. The due date for the Learning Curve assignment will be on the date the instructor starts covering that chapter. Due dates can change (to later) in some cases if the instructor falls behind in the scheduled content delivery. Grades will be assigned on the BioPortal course (not in BlazeView) and the final grade will be adjusted to a percent of 100 for the final grade computation. Learning Curve will be demonstrated on the first class day or during the instructor's office hours when you come by. Expectations are that requiring students to read and study a chapter before lecture will improve their understanding of the required material, lead to a better "clicker" grade, and lead to better exam grades. Since this is the instructor's first experience with Learning Curve, some adjustments may be made from student feedback throughout the semester.

Dropped grade: The lowest score you receive among either the three lecture exams, the combined lecture clicker grade, or the online Learning Curve grade will be excluded (dropped) and will not be used for computing your final grade. Therefore, although there are 500 possible points from lecture participation, homework, and exams (excluding the final), only 400 of those points will count toward your final grade. **The final exam (100 pts) is mandatory.**

Laboratory: (150 pts) Students will be graded on their performance in laboratory based on attendance, weekly quiz grades, selected homework assignments, group lab projects, and other miscellaneous assignments. In this class the laboratory is taught by different faculty members as listed for the above sections but the lab grade you obtain from these instructors is incorporated into your final course grade. Students should note that missing three labs (20% of labs) may result in the student obtaining a failing course grade (per student handbook).

Final grades will be based on a percentage of your cumulative points relative to the total points possible:

Guaranteed grade distribution is as follows:

Lecture Exams:	300 pts	A = 90-100% (585-650 points)
Lecture Clicker Grade	100 pts (dropped)	B = 80-89.9% (520-584 ")
Learning Curve Grade	100 pts	C = 70-79.9% (455-519 ")
Cumulative Final Exam (mandatory)	100 pts	D = 60-69.9% (390-454 ")
Laboratory (mandatory):	<u>150 pts</u>	F = ≤ 59.9% (≤ 389 points)
Total:	650 pts	

Notes on grading philosophy: 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 the professor any problems regarding course information, as they arise. Advice for students on studying is provided at the URL: <http://www.valdosta.edu/~rgoddard/Study.htm>

MAKE-UP EXAMS: The exam schedule is posted below. It is assumed that because students are registered for this course at the scheduled time and exams are given during this time, all students will be able to attend. Additionally, since one exam grade is dropped, absolutely **NO make-up exams are given**. If you cannot make it to a test at the assigned time for ANY reason, your exam grade will be zero and this will be the grade that is dropped in the computation of your final grade. In no circumstance should a student registered for this course miss two exams. If you know you will miss more than one exam time, you should **DROP THIS COURSE NOW**.

Tentative EXAM SCHEDULE (any changes will be announced in lecture and/or on BlazeView Announcements):

NOTE: YOU MUST BRING YOUR CLICKER WITH YOU FOR ALL EXAMS FOR YOUR EXAM ANSWERS TO BE RECORDED!

You will have the class time only to complete each lecture exam and 2 hours for the final.

Exams will consist of multiple choice questions (usually between 60 – 75 questions for exams, 120 questions for the final).

Exam 1:	13 February 2014
Exam 2:	27 March 2014
Exam 3:	1 May 2014
Final Examination:	Wednesday, 7 May 2014. 10:15 a.m. – 12:15 p.m. in the lecture classroom

Procedure for exams:

- ***Except for one clicker***, no books, electronic devices (including cell phones), or notebooks will be allowed during exams. Students using such items, even if the phone just rings (insure that your cell phone is off during exams!), will be asked to leave and will receive a zero for the exam.
- A student with more than a single clicker in their possession during any lecture class or exam constitutes cheating by the owners of the clickers and the person in possession of the clickers. All clickers present will be confiscated and their owners will receive a zero for the exam or the course depending on circumstances. Clickers will be returned to the owners after investigating the circumstances of the infraction.
- No talking will be allowed during the exam, but students are welcome to come to the instructor's desk to ask questions about the exam. If a cell phone rings during an exam, disrupting the exam, the student will be asked to leave. ***Turn off your cell phones during exams!***
- Every student should bring their University ID.

BlazeView. Some resources will be made available through BlazeView, and it also will be used to post exam grades. To access BlazeView, select the link from the Valdosta State University homepage or go directly to the following address (<https://vsu.view.usg.edu/>). **Note that students can use the BlazeView email tool to contact each other but if you need to contact Dr. Goddard, it is best to use the VSU email address at the beginning of this syllabus. Dr. Goddard does NOT check BlazeView email on a regular basis.**

Students experiencing difficulties using BlazeView should seek assistance through the VSU Microcomputing & System Services HELP-Desk located in Odum Library (telephone 245-4357).

Mid-term, or in-progress grades: The instructor is required to submit in-progress grades prior to mid-term (3/6/14). In this course, students will have feedback on at least one major exam by midterm, several lecture quizzes, lab quizzes, etc. Because the grading procedure in this course is designed to allow students to recover from initial failures (e.g. one major exam grade is dropped), all students at midterm still have the potential of passing the course. Even a failing mid-term grade can be changed to a grade of excellence (e.g. "A") by the end of the course. Students should therefore carefully evaluate their

option of dropping this course by midterm without academic penalty. Advice from the instructor is available during office hours. Students are encouraged to use the instructor's office hours to their advantage.

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 desk top and to make them available for inspection by their instructor and/or assistants.

Academic Integrity: Any behavior suggestive of academic dishonesty will lead to a reprimand, failure of an assignment, or failure of the course at the discretion of the instructor, but based on the severity of the infraction(s). Cooperative learning and group interactions are common and necessary to scientists and this activity is encouraged in the form of laboratory work and discussions about data and information. However, on assignments designed to assess individual learning of material in the class or writing and analytical skills, work must be completed totally independently. Behavior contrary to this principle constitutes cheating. Students should fully understand that plagiarism is not tolerated in this department or by the instructor and full appreciation for the intellectual property of others should be respected completely.

Plagiarism is the representation of someone else's work as your own. You may not blatantly copy phrases, paragraphs, or ideas from another's work. You cannot paraphrase someone else's ideas and use them as your own. You must analyze all data and work by others and then integrate this information with new data and conclusions that you independently synthesize, properly citing past work that supports your conclusions.

Students should read and be familiar with the Biology Department policy on plagiarism:

<http://www.valdosta.edu/colleges/arts-sciences/biology/documents/resources/PlagiarismPolicy.pdf>

Additionally students should read and understand the University policy on Academic Integrity:

<http://www.valdosta.edu/academics/academic-affairs/vp-office/academic-honesty-policies-and-procedures.php>

Disruptive behavior: No disruptive behavior of any kind will be tolerated in this course. Talking during lectures is disruptive due to the nature of the acoustic design of the room. 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 is discouraged, particularly from the front of the room, because it is disruptive, as is leaving early. 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. Ringing, buzzing, or any other sounds emitted from such devices will be treated as disruptive behavior on the part of the owner/possessor, and the owner/possessor will be asked to leave class immediately (including during exams!).

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, as positive identification cannot be made by this manner. Students may check their grades and unreturned papers/exams any time during the instructor's office hours (BC 2090).

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 Farber Hall. The phone numbers are 245-2498 (V/VP) and 219-1348 (TTY). <http://www.valdosta.edu/access/>.

TENTATIVE COURSE LECTURE MATERIAL OUTLINE:

Lecture #	Date:	Topic:	Text Readings (pgs):	Learning Curve Assignment	Tentative Due Date:
1	14 Jan.	Introduction, What is science? What is Biology?	1-19	Chapt. 1	1/21/14
		<i>Additional Reading: Genomes: 352-353; Evolution: 427-430, 432-436, 438-440; Phylogeny: 449-451, 454-456; Species concept: 468-474; Biological Nomenclature: 462-464.</i>			
2	16 Jan.	What is Biology: Unifying principles of life			
3	21 Jan.	Characterization of Life, Evolution and Diversity			
		<i>Additional Reading: Earth history: 503-522; Domain structure: 526-527; Endosymbiosis: 550-555; Ecology: 1121-1122</i>			
4	23 Jan.	Small Molecules and the Chemistry of Life	21-38	Chapt. 2	1/23/14
5	28 Jan.	Proteins, Carbohydrates, and Lipids	39-61	Chapt. 3	1/28/14
6	30 Jan.	Nucleic Acids and the Origin of Life	62-75	Chapt. 4	1/30/14
7	4 Feb.	Cell Structure & Function	77-101	Chapt. 5	2/6/14
8	6 Feb.	(cont'd)			
9	11 Feb.	Origin of Eukaryotic cells	101-102		
10	13 Feb.	Exam 1			
11	18 Feb.	Biological Membranes; Osmosis, Diffusion, Water Potential, and Transport mechanisms; Water, pH	105-122	Chapt. 6	2/18/14
12	20 Feb.				
13	25 Feb.	Cell Communication	125-141	Chapt. 7	2/25/14
14	27 Feb.	Basic Metabolism: Energy, Enzymes; Biochemistry	144-162	Chapt. 8	2/27/14
15	4 Mar.	(cont'd)			
	6 Mar.	Midterm; Last day to drop without penalty			
16	6 Mar.	Cellular Respiration	165-182	Chapt. 9	3/6/14
17	11 Mar.	(cont'd)			
18	13 Mar.	Photosynthesis	185-202	Chapt. 10	3/13/14
	18 Mar.	Spring Break, no class			
	20 Mar.	Spring Break, no class			
19	25 Mar.	Photosynthesis (cont'd)			
20	27 Mar.	Exam 2			
21	1 Apr.	Cell Division Cycle, Mitosis, Meiosis, Sexual life histories	205-229	Chapt. 11	4/1/14
22	3 Apr.				
23	8 Apr.	DNA and Its Role in Heredity	259-278	Chapt.13	4/8/14
24	10 Apr.	From DNA to Protein: Gene Expression	281-301	Chapt. 14	4/10/14
25	15 Apr.				
26	17 Apr.	Regulation of Genetic Expression	328-350	Chapt. 16	4/17/14
27	22 Apr.	Mutations	304-325	Chapt. 15	4/29/13
28	24 Apr.	Recombinant DNA technology; Restriction Enzymes, Vectors, and Hosts	373-390	Chapt.18	4/24/14
29	29 Apr	Finish open topics			
30	1 May	Exam 3			
	7 May.	Final Exam: 10:15 a.m. – 12:15 p.m. in lecture classroom			

LABORATORY EXERCISES:

Laboratories are taught by Drs. Nienow, Kang, Caletani, and Shah. Each will have their own grading protocol and expectations for the lab. All will follow the general outline below with some possible schedule changes for individual labs. Your grade in laboratory will be computed to a percentage value that will be used to determine your final lab score (out of 150 points) for incorporation into your final course grade.

Date:	Topic:
Jan. 13-17	Lab Safety and General Lab Introduction Laboratory Safety: Exercise 1: "The Black Box" - Scientific Method;
Jan. 20-24	MLK Holiday on Monday: No Labs
Jan. 27-31	Exercise 2: Basic Light Microscope Operation and Microscope checkout: Use of the Light Microscope
Feb. 3-7	Exercise 3: Observation of living cells with Light Microscopy; Basic cellular organization; Independent microscopy lab proposals discussed.
Feb. 10-14	Exercise 5: Cellular Water Relations
Feb. 17-21	Exercise 4: Independent Microscopy Projects; Project proposal lab; how to collect useful data
Feb. 24-28	Exercise 4: Independent Microscopy Projects: Distribution of microscopic flora and fauna; Data collection lab
March 3-7	Exercise 6: Protein extraction from biological tissues and determination of total protein, Spectrophotometry and Standard Curves
March 10-14	Exercise 7: Enzymology Lab: basics of α -amylase activity;
March 17-21	Spring Break
Mar. 24-28	Exercise 8: Enzyme Regulation: "Investigation of the effects of temperature and pH on enzyme activity"
March 31 – April 4	Exercise 9: Photosynthesis
Apr. 7-11	Exercise 11: Start: Isolation of plasmid DNA from <i>E.coli</i> and restriction with MspA1I:
Apr. 14-18	Exercise 12: PCR-based VNTR Human DNA typing OR GMOs in food.
Apr. 21-25	Exercise 14: Transformation of the pGLO plasmid into bacteria.
Apr. 28 – May 1	Analyze transformation experiment. Exercise 10: Mitosis and Meiosis

VSU administration has required that certain elements be included in all class syllabi. One of these requirements is that relevant course learning outcomes must be linked to the VSU General Educational Outcomes at <http://www.valdosta.edu/gec/documents/matrixGenEdoutcomestocorecourses.pdf> and to the Biology Department educational outcomes listed on page 131 of the current undergraduate catalog (2012-13). Students should be aware that the Biology department learning outcomes are extremely general and a more appropriate detailed outline of the learning outcomes we expect are represented by the ETS Biology Major Fields Test that we require seniors to complete and pass with a minimally acceptable score before graduating (see: <http://www.ets.org/mft/about/content/biology>).

VSU General Education Outcomes (lined out outcomes are not expected for this course)

- ~~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.

*. Mission statement not addressed in BIOL 1107.

Biology Department Educational Outcomes (as outlined in the Undergraduate catalog;

<http://www.valdosta.edu/catalog/1011/ugrad/documents/ug116-131.pdf>.

The program of study in the Department of Biology has numerous desired outcomes. Examples of these outcomes include the following:

1. Develop and test hypotheses, analyze data, and present the results and conclusions in both written and oral formats corresponding to those used in peer-reviewed journals and at scientific meetings.
2. Describe the evolutionary processes responsible for biological diversity, explain the phylogenetic relationships between the major 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, functioning and reproduction of living organisms.
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.