

**BIOL 1107K (CRN #50525), Principles of Biology I**  
**Summer Semester II, 2015    Section A**

**Lecture (BC 2022):**                    **MTWR**                    8:00 am - 9:25 am  
**Laboratory (BC 1083):**                **MW:**                    10:00 am - 12:50 pm

**Instructor:** Dr. Russ Goddard, BC 2090. (Phone 249-2642; or Dept. office 333-5759)  
(**Office hours:** TR 9:30 – 11:00 a.m.)  
**Email:** [rgoddard@valdosta.edu](mailto:rgoddard@valdosta.edu)

**Mail is not answered if sent on BlazeView!**

**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. 2011. Life: The Science of Biology. 9th edition. Sinauer Associates Inc., Sunderland, MA and W.H. Freeman & Co. Gordonsville, VA.

**Laboratory Manual:** Goddard, R.H. 2011. Methods and Investigations in Basic Biology, 5<sup>th</sup> ed. Hayden-McNeil Publishing, Plymouth, MI.

**Additional Course Materials on the BlazeView Course Page**

**General Objectives:** This course provides an introduction to basic principles of biology. Information presented in this class includes 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 general concept of biology. 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.

**Attendance:** Attendance in this course absolutely is required. Students should be seated at the beginning of class. If you are late, your attendance may not be acknowledged. Additionally, anyone arriving late or leaving early could miss a pop-quizz (no make-ups!). Attendance is taken on a random basis. 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. Although no missed quizzes can be made up, it is the instructor's prerogative to accept the excuse or not for consideration of absence point loss, but the student will need to independently determine what was missed and how to learn that material. Do not ask the instructor if anything important was covered. Everything covered during class time is important.

**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:** (300 pts) There will be 3 lecture exams given during regular class time 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 of the exams will be worth 100 pts.

**Lecture Pop-Quiz grade:** (100 pts). A series of unannounced "pop-quizzes" will be given during lectures and a percentage grade will be converted for these to count for the value of one lecture exam. Students should expect a pop quiz at any time during lecture. More than one pop-quiz, or none, is possible during a single lecture. The final computed pop-quiz grade is the only grade that might be significantly scaled to adjust for overall class performance!

**Dropped grade:** The lowest score you receive above, among either the three lecture exams or the combined pop-quiz grade will be excluded (dropped) and will not be used for computing your final grade. Therefore, although there are 400 possible points from lecture exams and pop-quizzes, only 300 of those points will count toward your

final grade. The final exam and laboratory grades (below: 100 pts. each) are mandatory.

**Laboratory:** (100 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. As the laboratory is considered an extremely important part to learning “hands-on” biology, any student will automatically lose points from their final lab grade for any unexcused absence from laboratory.

**Comprehensive final:** The final exam period for this class is set by the University and is scheduled for **Wednesday, July 29, 2015, at 8:00 – 10:00 am.** All students are required to take the final.

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

Lecture Exams:	300 pts	} one dropped
Lecture Pop-Quizzes	100 pts	
Final Exam	100 pts	
Laboratory:	<u>100 pts</u>	
Total:	500 pts (one exam dropped)	

Guaranteed grade distribution is as follows:

A = 90-100% (450-500 points)
B = 80-89.9% (400-449 " )
C = 70-79.9% (350-399 " )
D = 60-69.9% (300-349 " )
F = $\leq$ 59.9% ( $\leq$ 299 points)

**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.**

**EXAM SCHEDULE:**

**NOTE: YOU MUST BRING TWO SHARPENED #2 PENCILS WITH YOU TO EACH EXAM IF YOU WANT YOUR EXAM GRADED ACCURATELY**

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

Most exams are computer graded (Exams will usually contain multiple choice questions but other types of questions, including short answer and short essay are possible).

Note that you must darken your computer answer sheets completely to assure proper grading.

Exam 1:	Thursday, June 25, 2015
Exam 2:	Monday, July 13, 2015
Exam 3:	Tuesday, July 28, 2015
Final Examination:	<b>Wednesday, July 29, 2015, at 8:00 – 10:00 am.</b>

**Procedure for exams:**

- No books, electronic devices (including cell phones), or notebooks will be allowed during exams. 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 welcome to come to the instructor’s desk to ask questions about the exam.
- Every student should bring one or more #2 pencils suitable for marking computer scan sheets.
- Every student should bring their University ID and be prepared to present it for identity verification.

**BlazeView.** Some resources will be made available through BlazeView. To access BlazeView, select the link from the Valdosta State University homepage.

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 (Usually suspended for Summer classes):** The instructor is required to submit in-progress grades prior to midterm (7/5/10) for students to have feedback on their classroom progress by midterm. For the in-progress grade, your current lecture pop-quiz grade, exam 1 and current lab grade will be averaged to determine a grade. 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 (7/5/10) without academic penalty.

**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 may be asked to display their VSU student identification cards visibly or 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, 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> and read and understand the University policy on Academic Integrity:

<http://www.valdosta.edu/academics/academic-affairs/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 lecture 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. Student's grades and papers will be returned in class or from the instructor's office (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	Topic	Text Readings (pgs):
1 – 6/10	Introduction, What is science? What is Biology	Pg. 1 - 20
	<b>Additional Reading:</b> Mutations: 305; 308-309; Natural Selection and Evolution: 428-433, 438-441; Species concept: 468-469, 474; Biological Nomenclature: 462-464.	
2 – 6/11	Characterization of Life, Systematics,	
3 – 6/15	Unity and Diversity of life	
	<b>Additional Reading:</b> Earth history: 505-522 (skim); Domain structure: 526-527; Endosymbiosis: 550-552; Ecology: 1122-1145; Biogeochemical cycles: 1214 -1223	
4 – 6/16	Chemistry of Life, Water, pH	21 - 38
5 – 6/17	Macromolecules: Proteins and Carbohydrates and Lipids	39 – 61
6 – 6/18	Macromolecules: Nucleic Acids and Origin of life	62 - 76
7 – 6/22		
8 – 6/23	Cells: Cell Theory, Cell Structure and function	77-104
9 – 6/24	Origin of Eukaryotic Cells	550-552
10 – 6/25	<b>Exam 1</b>	
11 – 6/29	Cell membranes, osmosis, diffusion, membrane potential	105-124
12 – 6/30	Cell Signaling and Communication	125-143
13 – 7/1		
14 – 7/2	Metabolism, Energy and Enzymes	144-164
	<b>7/2 is Midterm; last day to drop without academic penalty</b>	
15 – 7/6	Cellular Respiration	165-184
16 – 7/7	Photosynthesis	185-204
17 – 7/8	Photosynthesis - Con't	
18 – 7/9	Cell division – cell cycle and cell cycle control	205-211
19 – 7/13	<b>Exam 2</b>	
20 – 7/14	Cell division (mitosis)	211-217
21 – 7/15	Cell division (meiosis)	217-231
22 – 7/16	DNA structure and replication	259-280
23 – 7/20	Protein Synthesis	281-303
24 – 7/21		
25 – 7/22	Recombinant DNA and Biotechnology	373-391
26 – 7/23	Prokaryotic Regulation of Gene Expression	342 - 351
27 – 7/27	Eukaryotic Regulation of Gene Expression	328-351
28 – 7/28	<b>Exam 3</b>	
7/29/2015	<b>Final Exam</b>	

**LABORATORY EXERCISES**  
**Tentative Schedule of Labs**

<b>Lab</b>	<b>Date:</b>	<b>Topic:</b>
<b>1</b>	10 June	Lab Safety and General Laboratory Introduction <b>Exercise 1:</b> "The Black Box"- Scientific Method
<b>2</b>	15 June	<b>Exercise 2:</b> Basic Light Microscope Operation and Microscope checkout: Use of the Light Microscope
<b>3</b>	17 June	<b>Exercise 3:</b> Light Microscopy Observations of cells and organisms; <b>Exercise 4:</b> Group Microscopy Project: Proposal Discussion & set-up Group Proposal (end of class)
<b>4</b>	22 June	<b>Exercise 4 Cont'd:</b> Independent Microscopy Projects: Distribution of microscopic flora and fauna; Data collection lab
<b>5</b>	24 June	<b>Exercise 5:</b> Cellular Water Relations
<b>6</b>	29 June	<b>Exercise 6:</b> Protein extraction from biological tissues, protein concentration determination, spectrophotometry and standard curves
<b>7</b>	1 July	<b>Exercise 7:</b> Enzymology Lab: basics of $\alpha$ -amylase activity
--	2 July	<b>Midterm- last day to drop</b>
<b>8</b>	6 July	<b>Exercise 8:</b> Enzyme Regulation: "Investigation of the effects of temperature and pH on enzyme activity"
	<b>8 July</b>	<b>Exercise 9:</b> Photosynthesis
<b>9</b>	13 July	<b>Exercise 10:</b> Mitosis & cell division
<b>10</b>	15 July	<b>Exercise 11: Start:</b> Isolation of plasmid DNA from E. coli and restriction with MspA1I
<b>11</b>	20 July	<b>Exercise 11:</b> Analysis by Gel Electrophoresis <b>Exercise 13: Start:</b> PCR-based analysis of GMO's in food.
<b>12</b>	22 July	<b>Exercise 13: Finish:</b> Analysis of PCR products by gel electrophoresis <b>Exercise 14: Start:</b> Transformation of the pGLO plasmid into bacteria
<b>13</b>	27 July	<b>Exercise 14: Finish:</b> Analysis of transformation products in bacteria Last Lab Quiz <b>Lab Clean-up:</b>
<b>14</b>		

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/academics/general-education-council/ge-outcomes.php> and to the Biology Department educational outcomes listed on page 113 of the current undergraduate catalog (2014-15). 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/s/mft/pdf/mft\\_testdesc\\_biology\\_4gmf.pdf](http://www.ets.org/s/mft/pdf/mft_testdesc_biology_4gmf.pdf)).

**VSU General Education Outcomes:** <http://www.valdosta.edu/academics/general-education-council/ge-outcomes.php>

**Biology Department Educational Outcomes (as outlined in the Undergraduate catalog)**

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.

For a more complete outline of desired biological outcomes assessed by the biology department, students are encouraged to visit the Major Field Test in Biology content page (address below). The Major Field Test is a required test of all seniors in biology.

See: [http://www.ets.org/s/mft/pdf/mft\\_testdesc\\_biology\\_4gmf.pdf](http://www.ets.org/s/mft/pdf/mft_testdesc_biology_4gmf.pdf)