

**BIOL 1107K, Principles of Biology I**  
**Fall Semester, 2009**      **Sections D, E, F**

**Lecture (BC 1023):**                    **TR    11:00 a.m. - 12:15 p.m.**  
**Laboratory (BC 1083):**            **Section D (CRN 81572):      Tues: 2:00 p.m. – 4:50 p.m.**  
   **Section E (CRN 81573):      Wed.: 8:00 a.m. – 10:50 a.m.**  
   **Section F (CRN 81574):      Wed.: 12:00 - 2:50 p.m.**

**Instructor:** Dr. Russ Goddard, BC 2090. (Phone 249-2642; or Dept. office 333-5759)  
(**Office hours:** TR 1:00 – 1:50 p.m. or by appt.)  
**email:** [rgoddard@valdosta.edu](mailto: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., H. C. Heller, G. H. Orians, W. K. Purves, D. M. Hillis. 2008. Life: The Science of Biology. 8th 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  
**Additional Course Materials on the WWW:**      <http://www.valdosta.edu/~rgoddard/>

**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 could miss the pop-quiz (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. It is the instructor's prerogative to accept the excuse or not.

**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 one **comprehensive final**. 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 the beginning of every lecture, but pop quizzes may be administered 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 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 (excluding the final), only 300 of those points will count toward your final grade. The final exam (100 pts) is 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 7 percentage points (14 labs in course) from their final lab grade for any unexcused absence

from laboratory.

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

Lecture Exams:	300 pts
Lecture Pop-Quizzes	<del>100 pts</del>
Final Exam	100 pts
Laboratory:	<u>100 pts</u>
Total:	500 pts

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 = ≤ 59.9% ( ≤ 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 can not 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:	<b>17 September 2009</b>
Exam 2:	<b>29 October 2009</b>
Exam 3:	<b>3 December 2009</b>
Final Examination:	<b>Friday, December 11, 2009. 10:15am - 12:15pm</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

**BlazeView.** Some resources will be made available through BlazeView, and it will also be used to post announcements and grades. To access BlazeView, select the link near the upper right corner of the Valdosta State University homepage or go directly to the following address.

<http://blazeview.valdosta.edu/webct/entryPageIns.dowebct>

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 by 9/30/2009 prior to mid-term (10/8/09). 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.

**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, 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 can not 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/biology/documents/biologyplagiarism.doc> and read and understand the University policy on Academic Integrity:

<http://www.valdosta.edu/academic/AcademicHonestyPoliciesandProcedures.shtml>

**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 can not be made by this manner. Students 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:**

<b>Lecture: Week of</b>	<b>Topics:</b>	<b>Text Readings (pgs):</b>
18 Aug.	Introduction, Science and Scientific Method, basic biological principles	1-19
25 Aug.	Chemistry of Life; Organic molecules, Macromolecules and the origin of life	20-36;38-67
1 Sept.	Cell Structure & Function	68-91
8 Sept.	Origin of Eukaryotic cells	92-95
15 Sept	Biological Membranes; Osmosis, Diffusion, Water Potential, and Transport mechanisms; Water, pH	97 - 117
<b>17 Sept.</b>	<b>Exam 1</b>	
22 Sept.	Basic Metabolism: Energy, Enzymes; Biochemistry	118 -137
29 Sept	(cont'd)	
6 Oct.	Cellular Respiration	138 -159
<b>8 Oct.</b>	<b>Midterm; Last day to drop without penalty</b>	
13 Oct.	Photosynthesis	160 - 179
20 Oct	Fall Break Day, No class on Tuesday	
22 Oct	Cell Communication	332-349
27 Oct.	Con't ...	
<b>29 Oct.</b>	<b>Exam 2</b>	
3 Nov.	Cell Division Cycle, Mitosis, Meiosis, Sexual life histories	180 - 205
10 Nov.	DNA Structure and Replication; Protein Synthesis	232 - 281
17 Nov.	Regulation of Genetic Expression	282 - 331
24 Nov.	Con't ...	
<b>25-27 Nov.</b>	<b>Thanksgiving Holidays</b>	
1 Dec.	Recombinant DNA technology; Restriction Enzymes, Vectors, and Hosts	352 - 399
<b>3 Dec.</b>	<b>Exam 3</b>	
<b>11 Dec.</b>	<b>Final Exam: 10:15 a.m. – 12:15 p.m.</b>	

**LABORATORY EXERCISES**

Week of:	Topic:
Aug. 18	Laboratory Safety: <b>Exercise 2:</b> "The Black Box" - Scientific Method;
Aug. 25	<b>Exercise 3:</b> Basic Light Microscope Operation and Microscope checkout: Use of the Light Microscope
Sept. 1	<b>Exercise 4:</b> Light Microscopy Observations of cells and organisms; Basic "5 Kingdom" levels of organization; Independent microscopy lab proposals discussed.; <b>Independent exercise on using the ODUM LIBRARY due.</b>
Sept. 8	<b>Exercise 5:</b> Independent Microscopy Projects; Project proposal lab
Sept. 15	<b>Exercise 5:</b> Independent Microscopy Projects: Distribution of microscopic flora and fauna; Data collection lab
Sept. 22	<b>Exercise 6:</b> Cellular Water Relations
Sept. 29	<b>Exercise 7:</b> Protein extraction from biological tissues and determination of total protein, Spectrophotometry and Standard Curves
Oct. 6	<b>Exercise 8:</b> Enzymology Lab: basics of $\alpha$ -amylase activity;
Oct. 8	Midterm
Oct. 13	<b>Exercise 9:</b> Enzyme Regulation: "Investigation of the effects of temperature and pH on enzyme activity"
Oct. 19	<b>Fall Break; no labs</b>
Oct. 27	<b>Exercise 10:</b> Photosynthesis
Oct. 27	<b>Exercise 11:</b> Mitosis / cell division
Nov. 3	Genetic engineering and Recombinant DNA (part 1)
Nov. 10	Genetic engineering and Recombinant DNA (part 2)
Nov. 17	Genetic engineering and Recombinant DNA (part 3)
Nov. 23	<b>Thanksgiving Holiday</b>
Dec. 1	Genetic engineering and Recombinant DNA (part 4)

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/academic/VSUGeneralEducationOutcomes.shtml> and to the Biology Department educational outcomes listed on page 113 of the current undergraduate catalog (2009-10). 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/Media/Tests/MFT/pdf/mft\\_testdesc\\_biology\\_4bmf.pdf](http://www.ets.org/Media/Tests/MFT/pdf/mft_testdesc_biology_4bmf.pdf)).

## **VSU General Education Outcomes**

- ~~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)**

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.