

**BIOL 1107: Principles of Biology I**  
**Fall Semester 2011**

**Lecture:**

**Sections J, K & L: Monday & Wednesday 2:00 p.m. – 3:15 pm, BC 1023**

**Laboratory**

**Section J: Tuesday 9:00 -11:50 am , BC 2083**

**Section K: Tuesday 2:00 – 4:50 pm, BC 2083**

**Section L: Friday 8:30 – 11:20 am, BC 2083**

**Instructor:**

Dr. John Elder

Office: BC 2088

Office hours: Tuesday . 12:00a.m. – 2:00 p.m., or by appointment

Office Phone: (229) 333-5762

Email: jfelder@valdosta.edu

**Welcome to Principles of Biology I.** This is the first course in a series designed to help you develop a strong foundation in the biological sciences to build on throughout your studies at VSU and beyond.

**BIOL 1107 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:** 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 field of biology. “Additionally, 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”.

**Educational Outcomes:**

- Develop and test hypotheses, collect and analyze data, and present the results and conclusions
- Exhibit an understanding of basic biological chemistry
- Describe the evolutionary processes responsible for biological diversity, explain the phylogenetic relationships among the major taxa of life, and provide examples
- Demonstrate an understanding of the cellular basis of life

**Required Materials:**

- **Text:** Sadava, D., Heller, H.C., Orians, G.H., Purves, W.K., & Hillis, D.M. 2008. LIFE: The Science of Biology. Ninth Edition. Sinauer Associates, Inc., Sunderland, MA, and W.H. Freeman & Co., Gordonsville, VA.

**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:**

**Exams.** There will be three 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. Exam format will be specified by your instructor. The unit exams are not cumulative. Each of the unit exams and the cumulative final exam will be worth 100 points each. 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:** 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 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:**

**Calculate your overall grade as follows:**

**(Lab percentage grade X .25) + (lecture percentage grade X .75) = Overall percentage grade.**

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

**Mid-term, or in-progress grades:** The instructor is required to submit in-progress grades prior to mid-term as posted (9/30/2009). 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. Four opportunities to earn bonus points will be announced in class during the semester. If absent, the bonus points will not count against your grade; however, the points cannot be made up. 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".

### **Important information:**

- Laptop computers can be used during lecture; however, students using them must sit in the first four rows of the classroom.
- For Biology majors, a grade of C or higher is required in this course before additional biology courses can be attempted.
- Midterm, October 7<sup>th</sup>, is the last day for withdrawing without penalty.

### **Procedure for exams:**

- No books, electronic devices, 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 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.

**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.

**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 cannot be made by this manner.

**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](http://www.valdosta.edu/ssc).

**Students with Disabilities:** Students requesting classroom accommodations or modifications because of a documented disability must contact the Access Office for Students with Disabilities located in room 1115 Nevins Hall. The phone number is (229) 245-2498.

**Cheating:** Students caught cheating will receive a grade of “F” for the assignment in question and possibly for the course. Cheating will be reported to the Dean of Students.

**TENTATIVE LECTURE OUTLINE:**

|           | <b>Date:</b>        | <b>Topics:</b>   |  |
|-----------|---------------------|--|--|
| <b>1</b>  | August 17 (W)       | Introduction to Biology  |  |
| <b>2</b>  | August 22 (M)       | Chemistry of Life  |  |
| <b>3</b>  | August 24 (W)       | Macromolecules & origin of life  |  |
| <b>4</b>  | August 29(M)        | Macromolecules & origin of life  |  |
| <b>5</b>  | August 31 (W)       | Cells & Cell membrane  |  |
| <b>6</b>  | Sept. 05 (M)        | Cells & Cell membrane & Cell signaling & communication                     |  |
| <b>7</b>  | Sept. 07 (W)        | Cell signaling & communication   |  |
| <b>8</b>  | <b>Sept. 12 (M)</b> | <b>TEST # 1</b>  |  |
| <b>9</b>  | Sept. 14 (W)        | Energy, Enzymes, & metabolism  |  |
| <b>10</b> | Sept. 19 (M)        | Energy, Enzymes, & metabolism  |  |
| <b>11</b> | Sept. 21(W)         | Pathways that harvest chemical energy                                      |  |
| <b>12</b> | Sept. 26 (M)        | Pathways that harvest chemical energy                                      |  |
| <b>13</b> | Sept. 28 (W)        | Pathways that harvest chemical energy; Photosynthesis                      |  |
| <b>14</b> | Oct. 03 (M)         | Photosynthesis   |  |
| <b>15</b> | Oct. 5 (W)          | Photosynthesis (Midterm is Tuesday 6 <sup>th</sup> – Last Withdrawal Date) |  |
| <b>16</b> | <b>Oct. 10 (M)</b>  | <b>TEST # 2</b>  |  |
| <b>17</b> | Oct. 12 (W)         | Chromosomes, the cell cycle, and cell division                             |  |
| <b>18</b> | Oct. 17 (M)         | Inheritance, genes, and chromosomes  |  |
| <b>19</b> | <b>Oct. 19 (W)</b>  | <b>Fall Break –No Class</b>  |  |
| <b>20</b> | Oct. 24 (M)         | Inheritance, genes, and chromosomes  |  |
| <b>21</b> | Oct. 26 (W)         | Inheritance, genes, and chromosomes  |  |
| <b>22</b> | Oct. 31(M)          | DNA and Role in Heredity   |  |
| <b>23</b> | Nov. 2 (W)          | DNA and Role in Heredity   |  |
| <b>24</b> | Nov. 7 (M)          | DNA to protein   |  |
| <b>25</b> | Nov. 9 (W)          | Genome mutation & molecular medicine                                       |  |
| <b>26</b> | Nov. 14 (M)         | Regulation of Gene Expression & The Eukaryotic Genome                      |  |
| <b>27</b> | Nov. 16 (W)         | Recombinant DNA & biotechnology  |  |
| <b>28</b> | Nov. 21 (M)         | Differential gene expression in development                                |  |
| <b>29</b> | Nov. 23(W)          | Development and evolutionary change  |  |
| <b>30</b> | <b>Nov. 25 (Th)</b> | <b>Thanksgivings – No Class</b>  |  |
| <b>31</b> | Nov. 28 (M)         | Catch up – Review  |  |
| <b>32</b> | Nov. 30 (W)         | <b>TEST # 3</b>  |  |
| <b>33</b> | Dec. 05 (M)         | <b>Last class</b>  |  |
| <b>34</b> | Dec. 06             | <b>No Class – Exam Prep</b>  |  |
| <b>35</b> | <b>Dec. 07 (W)</b>  | <b>Final Exam 12:30-2:30 pm</b>  |  |

**Principles of Biology I Syllabus Laboratory Addendum (Fall Semester 2011)**  
**BIOL 1107 Sections J, K and L :**

**Laboratory (BC 1083):**

**Section J: Tuesday 9:00 -11:50 am , BC 2083**

**Section K: Tuesday 2:00 – 4:50 pm, BC 2083**

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**Educational Outcomes:**

- Develop and test hypotheses, collect and analyze data, and present the results and conclusions
- Exhibit an understanding of basic biological chemistry
- Describe the evolutionary processes responsible for biological diversity, explain the phylogenetic relationships among the major taxa of life, and provide examples
- Demonstrate an understanding of the cellular basis of life

**Required Materials:**

**Methods and Investigations in Basic Biology, 4<sup>th</sup> Edition, R.H. Goddard, Hayden McNeil Publishing.**

**Grading:**

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**Overall 1107 Grade Assessment:**

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## Proposed Laboratory Schedule, BIOL 1107, FALL 2011

### LABORATORY EXERCISES:

| Lab | Week of      | Topic:  |
|-----|--------------|---|
| 1   | August 15    | Laboratory Introduction<br>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: $\alpha$ -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   | <b>Fall Break – No Lab</b>  |
| 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  | <b>Thanksgiving Holiday – No Lab</b>  |
| 14  | November 28  | Ex. 13 GMO part 2   |