BSC 1005 – General Education Biology Laboratory (1 credit)
Spring 2007-2 Term (January – April 2008)
Reference #440316

Day/Time: Wednesdays, 10:00-11:40 AM

Classroom: Room G-314, Building G, MDC-Homestead Campus

Instructor: Professor Mark Chiappone
On Campus: (305) 237-5073
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Office Hours: Building B, Room B-119
Mondays: 10:00 AM to 5:30 PM
Wednesdays: 12:00 AM to 2:00 PM

Learning Support Lab, Room D-203
Tuesdays and Thursdays: 12:40-2:00 PM
Wednesdays: 2:00 PM to 5:30 PM
Fridays: 10:00 AM to 12:00 PM

Course Description: This general education biology laboratory course is an optional one-credit lab to provide students with experience in the scientific process. This course provides a basic understanding of the biological systems and developing of primary skills required at the laboratory settings. Pre- and co-requisites: none. (2 hr. lab).

General Education Outcomes: (1) Communicate effectively using listening, speaking, reading, and writing skills.
(2) Use quantitative analytical skills to evaluate and process numerical data.
(3) Solve problems using critical and creative thinking and scientific reasoning.
(8) Use computer and emerging technologies effectively.
(10) Describe how natural systems function and recognize the impact of humans on the environment.

Resources

Textbook: Symbiosis, the Benjamin Cummings Custom Laboratory Program for the Biological Sciences, Miami Dade College, Homestead Campus (2007). Every student must have a copy of his/her own laboratory manual.

Course Web Site: Your professor's web site is available at http://faculty.mdc.edu/mchiappo and provides links to the course syllabus, PowerPoint slides covering lab topics, and practice quizzes for the topics that will be covered in the laboratory.

Learning Support: Computer support and tutoring is available in the Learning Support Lab and Computer Courtyard located in the Information Technology Center (2nd floor above library). Your instructor is available outside of the classroom if you need additional help studying for quizzes or completing laboratory assignments.

Class Procedures

Attendance: There will be a sign-in sheet for every class to verify attendance. If you cannot attend class, please notify the instructor via email or telephone. Class participation counts as 10% of your grade; therefore, poor attendance will be reflected in the final grade. If you miss a lab, you will miss the quiz and the write-up, so you are expected to attend every laboratory session.

PERSONAL COMMUNICATION DEVICES: Pagers and cellular phones are NOT conducive to the educational process in this class. I will assume that any interruption due to a personal communication device will be justifiable based on a real emergency and that the student being summoned will need to leave immediately to deliver a baby, attend to the dying, retrieve an injured child from daycare, or otherwise take immediate action which necessitates leaving. This is especially significant during exams.

Supplementary Materials: Background information on the laboratory exercises and practice quizzes are available online on your professor's faculty web page at http://faculty.mdc.edu/mchiappo. Quiz questions will be drawn from questions on the practice quizzes and will help to reinforce important concepts covered during each lab.

Learning Support Lab: You are encouraged to visit the Learning Support Lab or Computer Courtyard weekly if you do not have access to a computer with internet connection off campus.

Grading Procedure

Components: **30% Quizzes**: there will be a quiz for labs 1-11 taken at the beginning of the class following the particular lab assignment, with each quiz counting towards 2.7% of your final grade. Quizzes will be in multiple-choice format and will consist of 20-25 questions that highlight the main topics and themes of each laboratory topic. Quizzes will not be graded on a curve. Except for unusual circumstances, no make-up quizzes will be provided. Therefore, if you miss a quiz, a zero will be recorded for that particular quiz.

10% Final Examination: one cumulative exam in multiple-choice format covering the main themes of the laboratory course. Final exam questions will be drawn from the practice quizzes for all 12 labs. The final exam will not be graded on a curve. Except for unusual circumstances, no make-up will be provided for the final. Therefore, if you miss the final exam, a zero will be recorded. If you have a scheduling conflict (i.e. doctor's appointment, vacation plans), you must make arrangements with the professor to take the exam earlier.

50% Lab Write-up: You will complete 12 laboratory write-ups during the course, consisting of completion of pages from your laboratory manual. Each lab write-up counts for 4.167% of your final grade and will deal with various aspects of biology covered during the course. Lab write-ups must be completed by the following week. Late work will not be graded. If you miss a lab, no make-up will be provided and a zero will be recorded for that particular assignment.

10% Attendance and participation: a sign-in sheet will be available at the beginning of class to verify attendance. Each laboratory meeting counts for approximately 0.714% points towards your final grade (total of 14 classes). You are expected to have read the material that will be covered before the laboratory in preparation for the weekly quizzes and the lab exercises.

Grading Scale: A = 90-100, B = 80-89, C = 70-79, D = 60-69, F = 0-59

No pluses or minuses will be given. In order to receive an incomplete, the student must be passing the course with a "C" or better and must have attended at least two-thirds of the classes. An incomplete is granted only in a rare circumstance. It is the responsibility of the student to withdraw from the course by the appropriate deadline if the student wishes to receive a grade of W.

Important Dates for the Spring 2007-2 Semester (January-April 2008)

Monday, January 14:	Last Day to Change Courses without Penalty; Withdraw from classes with 100% refund; Register, add, drop, or change sections of credit courses without signature of instructor
Tuesday, March 18:	Last Day to Withdraw with a Grade of W
Friday, April 25:	Last Day of Classes
Friday, May 2:	Last Day of Final Exams

BSC 1005L – General Education Biology Laboratory
Spring 2007-2 Tentative Course Schedule

Class #	Date	Activity (page numbers from lab manual)
1	W 1/09	Course Introduction, Laboratory Safety, Lab Methods and Tools, Purpose of Lab and Field Notebooks, Using the Metric System (Pages 1-12)
2	W 1/16	Lab #1: Biological Macromolecules: Chemical Analysis of Biological Substances (pages 13-18)
3	W 1/23	Lab #2: The Microscope (pages 29-39) **Quiz 1**
4	W 1/30	Lab #3: Cell Anatomy: Eukaryotic Cells (pages 41-48) **Quiz 2**
5	W 2/06	Lab #4: Diffusion, Osmosis, Plant cells, and Tonicity (pages 19-28) **Quiz 3**
6	W 2/13	Lab #5: Photosynthesis (pages 49-58) **Quiz 4**
7	W 2/20	Lab #6: Cell Division: Mitosis in Plant Cells and Whitefish (pages 59-73) **Quiz 5**
8	W 2/27	Lab #7: Genetics (pages 75-84) **Quiz 6**
9	W 3/05	Lab #8: Genetics (continued) (pages 85-95) **Quiz 7**
10	W 3/12	Lab #9: Survey of the Plant Kingdom (pages 155-166) **Quiz 8**
11	W 3/19	Lab #10: Survey of the Animal Kingdom: Phylum Arthropoda (pages 109-122) **Quiz 9**
12	W 3/26	Lab #11: Ecology: Greenhouse Effect and Mutualism (pages 123-132) **Quiz 10**
13	W 4/02	Lab #12: Introduction to the Human Body: Human Senses (pages 143-153) **Quiz 11**
14	W 4/09	**Final Examination**

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Course Competencies

Competency 1: The Sciences of Biology. Upon successful completion of this course, the student will have knowledge of selected principles and ideas in the biological sciences, including:

1.1 The existence of the different branches of biology, including biochemistry, cytology, histology, botany, zoology, anatomy, physiology, and ecology;
1.2 Selected advances in the biological sciences and their practical application in today's world;
1.3 The role of humans in the biosphere; and
1.4 The influence of human populations on plant and animal communities.

Competency 2: Chemical organization of biological systems. Upon successful completion of this course, the student will have an understanding of:

2.1 The structure of specific and large organic and small inorganic molecules;
2.2 The principles of osmosis and diffusion;
2.3 Applications of osmosis and diffusion to cells in the real world; and
2.4 The physical and chemical properties of water.

Competency 3: Introductory microscopy. Upon successful completion of this course, the student will be able to demonstrate:

3.1 Knowledge of the basic parts of the compound microscope;
3.2 Ability to use correctly the compound microscope (including care and storage).
3.3 Knowledge of the parts of the stereoscope;
3.4 Ability to use correctly the stereoscope; and
3.5 Knowledge of the principles of advanced techniques of microscopy, such as dark-field and phase microscopy, as well as scanning and transmission electron microscopy.

Competency 4: Cells and tissues. Upon successful completion of this course, the student will understand the differences between plant and animal cells, to recognize cellular organelles, and explain their function by:

4.1 Identifying the major cellular organelles;
4.2 Explaining how substances move into and out of cells;
4.3 Understanding and identifying the stages of mitosis and meiosis; and
4.4 Identifying the four basic tissue types that comprise the human body: epithelial, connective, muscle, and nervous tissues.

Competency 5: Introduction to botany. Upon successful completion of this course, the student will have knowledge of plant taxonomy and be able to identify the major parts of the plants by the:

5.1 Identification of angiosperms;
5.2 Knowledge of the characteristics of dicots and monocots; and
5.3 Identification and knowledge of the structure and function of the parts of flowering plants, including leaves, flowers, stems, and roots.

Competency 6: Introduction to the energy resources in the biosphere. Upon successful completion of this course, the student will be able to understand the origin of energy on the planet Earth and the importance of photosynthesis:

6.1 Understanding the role of chlorophyll and other photo-pigments in the process of photosynthesis;
6.2 Knowledge of the "light" (light-dependent) and "dark" (light-independent) reactions of photosynthesis;
6.3 Introduction to the principles of spectrophotometry and paper chromatography;
6.4 Introduction to the visible spectrum;
6.5 Demonstration of the ability to analyze and graph scientific information.

Competency 7: Introduction to zoology. Upon successful completion of this course, the student will have a working knowledge of animal taxonomy, with special emphasis on the Phylum Arthropoda:

7.1 Knowledge of the levels of classification;
7.2 Knowledge of the characteristics of the classes of the Phylum Arthropoda;
7.3 Knowledge of selected adaptations, including protective coloration and mimicry; and
7.4 Knowledge of the economic importance of arthropods to mankind.

Competency 8: Introduction to ecology. Upon successful completion of this course, the student will be able to understand the function and importance of biological communities, and demonstrate:

8.1 Acquaintance with native and exotic species of local importance;
8.2 Describe the characteristics of invasive exotic species and the means for their control;
8.3 Ability to critically observe and describe different species as specified by the instructor;
8.4 An understanding of the interdependence of species; and
8.5 An understanding of the concepts of food chains, food webs, and energy pyramids.

Competency 9: Introduction to human anatomy and physiology. Upon successful completion of this course, the student will be able to understand the basic structure and function of the circulatory, nervous, and reproductive systems, and demonstrate knowledge of the principles of:

9.1 Blood circulation and the electrical activity of the heart;
9.2 Respiration and lung volume;
9.3 Sensation and acquaintance with the organs of special senses, including cutaneous receptors, olfaction, taste, vision, hearing, and equilibrium; and
9.4 Reproduction and the stages of early development.

Competency 10: Genetic principles and patterns. Upon successful completion of this course, the student will be able to understand principles of inheritance and demonstrate the ability to analyze:

10.1 Monohybrid crosses;
10.2 Dihybrid crosses;
10.3 Patterns of inheritance of sex-linked traits;
10.4 Patterns of autosomal inheritance; and
10.5 Inheritance of the proteins associated with blood typing.

Students will demonstrate knowledge of modern genetics by:
10.6 Describing the Human Genome Project;
10.7 Discussing current issues and developments in biotechnology; and
10.8 Discussing the social, scientific, and ethical issues associated with genomic research.