Syllabus for
BIO 111—Introductory Biology I Laboratory
1.0 Credit Hour
Fall 1999

I. COURSE DESCRIPTION

A course designed to complement and supplement BIO 111 Lecture. In this course, students learn by doing; i.e., by handling glassware, chemicals, organisms, and equipment; by observing, forming hypotheses, conducting experiments, analyzing data, and making conclusions; and by working in a more individualized atmosphere than is possible in the classroom. Includes dissection of a fetal pig.

II. COURSE GOALS

A. It is an established educational principle that learning and retention of that learned is greatest where a maximum of the human senses are utilized in the learning process. In other words, we learn best and retain most when we utilize all our learning senses (sight, sound, touch, taste, and smell). Students in BIO 111 Lab will have the opportunity of using some of the tools and methods of science. They will be handling test tubes, beakers, pipettes, graduated cylinders, microscopes, other items of equipment, many chemical solutions of varying types, and assorted living materials, both plants and animals. Before the semester is over, every student will have conducted numerous tests and experiments, observed demonstrations, analyzed data and situations from which to draw conclusions, and will have had many other varied learning experiences designed to enhance and promote learning.

B. BIO 111 Lab is a laboratory course designed to familiarize the beginning biology major with the well ordered and "grand design" of organisms at all levels of organization.

C. This course is a study of the main principles of life common to both plants and animals, including scientific methods, levels of organization, cell structure and function, photosynthesis, respiration, molecular and Mendelian genetics, reproduction, development, evolution, behavior, and ecology.

D. Upon completion of this course the student should have a more mature understanding of the complexity of life at the chemical, cellular, organismic, and populational level.

III. COURSE OBJECTIVES

A. Terminal Objectives

Upon completion of this course, the student should be able to do the following:

1. conserve using the principles and concepts of life common to both plants and animals.
2. apply a basic, elementary, biologically oriented background in chemical and physical principles by performing specified laboratory procedures to directions given.
3. use the scientific method in problem-solving situations.
4. describe structures and function of each level of organization as specified in laboratory situations.
5. demonstrate proficiency in using scientific instruments and techniques.

6. relate the principles of biology to problems in modern life within a Christian perspective.
7. have a command of terms necessary to comprehend and discuss biological concepts presented in the course.
8. exhibit a mature, responsible attitude toward your work by being prepared, present, and punctual for the training inherent in the discipline of science and in the development of consistent Christian character.
9. relate the role of biology to modern problems; e.g., energy, environmental pollution, world food problems, etc.
10. exhibit an appreciation of life, God's greatest creation.

B. Unit Objectives (stated in the laboratory manual for each exercise)

C. Objectives for Teachers in Teacher Preparation Programs

This course meets the below listed competencies established by the Oklahoma Commission on Teacher Preparation Program.

Is able to teach with a broad understanding of all content areas and understand the interaction between the sciences and the process skills as it relates to Life Science Content:

SC 7.b.1: Structure and function in living systems
SC 7.b.6: The cell
SC 7.6.7: The molecular basis of heredity
SC 7.b.10: Matter, energy, and organization in living systems

IV. TEXTBOOKS

A. Required

Eberhard, Carolyn. 1999. General Biology Laboratory Manual. Orlando: Saunders College Publishing.

B. Optional

Van de Graaff, K. M. & J. L. Cranley. 1996. A Photographic Atlas for the Biology Laboratory, 3rd ed. Englewood: Morton Publishing Company.

V. COURSE PROCEDURES

A. Course Prerequisites or Corequisites

BIO 111 Laboratory is indispensable and inseparable from BIO 111 Lecture. Therefore, BIO 111 Laboratory must be taken concurrently. It is in BIO 111 Laboratory that many of the principles studied about in BIO 111 Lecture will be tested and studied in more detail. Much of the learning necessary to succeed in BIO 111 will take place in BIO 111 Laboratory.

B. Evaluation Procedures
1. Grading System

Credit for laboratory performance will come from the three sources listed below. Total possible points in this course equal 500.

a. Lab book exercises should be completed for studying; 10 points per 13 weeks are earned for attendance and lab book exercises on the current unit of study..... 130 points
b. Written quizzes at the beginning of each lab period; 20 points per week for 12 weeks ..... 240 points
c. Laboratory practical ..... 120 points
d. Instructor's subjective evaluation of the student's attitude, promptness, neatness in lab work, and general laboratory philosophy and techniques..... 10 points

Total = 500 points

2. Final Grade Evaluation

A = >90%
B = 80-89%
C = 70-79%
D = 60-69%
F = <60%

C. University Policies

1. "Consistent with Section 504 of The Rehabilitation Act of 1973 and the Americans with Disabilities Act, ORU ensures that no 'qualified individual' will be denied reasonable accommodation in the form of modifications of policies, practices, and/or procedures." Students with disabilities who wish to access services should contact their professor(s) and the Office of Disability Services at Ext. 7355 to initiate the process.
2. Students and faculty at Oral Roberts University adhere to all laws addressing the ethical use of others' materials, whether it is in the form of print, video, multimedia, or computer software.
3. Students taking a late exam because of an unauthorized absence will be charged a late exam fee.

VI. ATTENDANCE POLICY

A. Attendance at each class or laboratory is mandatory at Oral Roberts University.

B. Double cuts will be assessed for absences immediately preceding or following holidays and/or breaks.

C. Excessive absences can reduce a student's grade or deny credit for the course.

D. One characteristic of a mature, dependable individual is for that person to "make himself or herself do what has to be done, when it needs doing, whether it's personally convenient or not." That in itself is good preparation for life after ORU. Much Scripture teaches Christians to be dependable, self-disciplined individuals.

E. Makeups in freshman biology labs are not possible once the lab has been completed, supplies discarded, and equipment stored away for the semester. Therefore, the following represents the policy for absences from freshman biology labs.

1. Excused Absences—Awarded for academically excused absences; and at the discretion of the instructor for legitimate reasons such as serious, severe illness, or emergency situations which, in the opinion of the instructor, could not have been avoided by the student. It is the responsibility of the student to contact the

instructor. Advanced arrangements are always best, but if not before, then as soon as possible after the absence. Makeups can usually be arranged if the lab remains "setup." Otherwise, an "E" (excused absence) will be assigned for that lab (both attendance points and for the quiz on that lab information). The "E" implies the attendance and quiz scores missed because of the absence will not count for or against the student's final grade. On the other hand, it does not excuse the student from knowing the information missed by the time the final lab exam is administered. The missed quiz(zes) may be made-up with no penalty assessed if agreed to by the instructor and student.

2. Unexcused Absences—Zeros will be assigned for unexcused absences from labs, and the student is not excused for the information covered during the absence(s). Zeros will be assigned for quizzes missed. If the instructor agrees to do so, unexcused late "makeup" quizzes may be administered, but with a 30% penalty for the first time, 40% for the second time, etc.
3. More than three (3) absences during a semester results in an "F" being assigned for a course grade. Incompletes (I's) are NOT an option!

VII. COURSE CALENDAR

WEEK	TITLE	TEXT ASSIGNMENT (EBERHARD OR SUPPLEMENT)
1	The Scientific Method The Microscope	Appendix A Topic 2
2	The Chemistry of Life	Topic 1
3	Cell Organization Cell Membranes	Topic 3 Topic 4
4	Enzyme Action	Topic 5
5	Photosynthesis	Topic 7
6	Cellular Respiration	Topic 6
7	DNA and Protein Synthesis	Topic 11, Handouts
8	Chromosomes, Mitosis, Meiosis	Topic 8, Handouts
9	Mendelian Genetics	Topic 9
10	Human Genetics	Topic 10
11	Development in Animals	Topic 31
12	Fetal Pig: External Anatomy Skin, Bones, Muscles, Digestive System	Topic 24, 25 DeGraaff/Crawley, p. 200
13	Fetal Pig: Circulatory, Respiratory, and Urogenital Systems	Topic 26, 28, 29 DeGraaff/Crawley, p. 200
14	Laboratory Practical Exam	ALL Assignments

VIII. ASSESSMENT SUMMARY

Richard Couch and others
Name of Instructor

MISSION

The lifestyle at ORU is rooted in the word "Wholeness." ORU seeks to educate the whole person, with balanced emphasis placed on the development of mind, spirit, and body.

GENERAL OUTCOMES

1. Spiritual Development
2. Physical Development
3. Communication
4. Analysis
5. Problem Solving
6. Valuing in Decision Making
7. Social Interaction
8. Global Perspectives
9. Effective Citizenship
10. Aesthetic Responsiveness

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MAJOR OUTCOMES

Analysis/Problem Solving:
Be proficient in biology by acquisition of a broad-based knowledge in biology and by the development of scientific skills.

Be equipped to do independent investigation, analysis, and evaluation of a scientific nature.

Communication:
Be able to effectively communicate science in written and oral format.

Global Perspective/Spiritual Development:
Be able to develop a scientific worldview consistent with Biblical truth.

Introduction to Biology I Lab
Title of Course

COURSE GOALS

BIO 111 Lab students will be afforded the opportunity of using some of the tools, supplies, and methods of science. During the semester of labs, students will be given the opportunity to conduct numerous tests and experiments, observe demonstrations, analyze data and situations from which to draw conclusions, give oral reports, and have numerous other learning experiences designed to enhance and promote learning.

Biology
Name of Department

ASSESSMENT OF COURSE GOALS

STIMULI:

By using biology (scientific equipment, e.g., microscopes, and supplies, e.g., glassware, chemicals, and organisms) student interests will be enhanced for their chosen career goals.

Conduct an experiment (lab exercise), analyze results, prepare visual aids, and orally present (small group or individuals) results of experiment.

CRITERIA:

Conduct most (80%) exercises independently or in small groups.

Pass (>60%) weekly quizzes.

Pass (>60%) final "practical lab exam."