Syllabus for
BIO 101—Principles of Biology Laboratory
1.0 Credit Hour
Fall 2003

I. COURSE DESCRIPTION

Lab exercises, experiments, and audiovisual presentations involving cells, respiration, photosynthesis, classical and molecular genetics, protein synthesis, enzyme action, reproduction, development, behavior, and ecology.
Corerequisite: BIO 101 Lecture
Lab Fee: $25.00

II. COURSE GOALS

The laboratory is an opportunity for students to do science and personally experience some of the methods previously encountered only theoretically and passively. The laboratory is an excellent place for those who lack experience with the reality of the living world in which we function. Thus, many insights, concepts, and principles will become more apparent to students when they actually "see what they mean."

III. COURSE OBJECTIVES

A. Terminal Objectives

As a result of successfully completing this course, the student will be able to do the following:

1. Converse using terms related to the principles of life common to both plant and animal science.
2. Describe and demonstrate the scientific method in problem-solving situations as they occur in laboratory exercises.
3. Describe the various structures and function of each level of organization as demonstrated in laboratory presentations.
4. Demonstrate proficiency in the use of various types of laboratory apparatus such as the microscope, pollution test kits, spectroscope, and other equipment outlined in the weekly laboratory procedures.
5. Gain a command of the terms necessary to comprehend and discuss the biological concepts presented in the laboratory as evidenced by being able to use the terms correctly.
6. Exhibit mature, responsible attitude in your work, as part of the training inherent in the discipline of science and development of consistent Christian character by being prepared, present, and punctual.
7. Relate biology to modern problems (e.g., environmental pollution, world food problems) that are largely scientific in nature.

B. Unit Objectives

Specific objectives are listed at the beginning of each unit in the lab exercise. Deletions and additions to those lists will be announced in lab.

IV. TEXTBOOKS

Required Textbooks
None

V. POLICIES AND PROCEDURES

A. University Policies and Procedures

1. Attendance at each class or laboratory is mandatory at Oral Roberts University.
2. Double cuts will be assessed for absences immediately preceding or following holidays.
3. Excessive absences can reduce a student's grade or deny credit for the course.
4. Students taking a late exam because of an unauthorized absence will be charged a late exam fee.
5. 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.
6. Final exams cannot be given before their scheduled times. Students need to check the final exam schedule before planning return flights or other events at the end of the semester.

B. Course Policies and Procedures

1. Grading System

a. Quizzes

A short 25-point quiz is given at the beginning of each lab. This quiz consists mainly of material for the **previous week**. The remainder of the quiz consists of material from the **current week**. The second part of the quiz is to assure that students have prepared for lab ahead of time.

b. Laboratory Performance 10 points/week

This includes handling of equipment, neatness, completion of exercises, and clean up of lab station.

The criteria for grading the exercises are as follows:

(1) Writing or printing is legible.
(2) **All** questions are answered, data are determined and analyzed, etc., for the **entire exercise**.
(3) A demonstrated understanding of principles being studied as evidenced by **subjective** evaluation via an oral quiz at the conclusion of the lab.
(4) Points are deducted for failure to complete any of the above.
(5) Anyone who fails to checkout through the instructor of lab assistant receives a zero for lab performance.

c. Laboratory Practical 100 points

A lab practical on live and preserved specimens, models, microslides, and other study materials covers the whole course.

d. Final Graduate Evaluation

Quizzes	20 x 8 weeks	=	160 points
Lab Performance	10 x 10 weeks	=	100 points
Lab Practical		=	100 points
		=	360 Total

e.

Percent	Grade
90 – 100%	A
80 – 89%	B
70 – 79%	C
60 – 69%	D
<59%	F

2. Absences
   a. Excused
      (1) Seldom is there a legitimate reason for failure to attend an assigned laboratory period or complete assignments. Absences may be excused but only for legitimate reasons. Legitimate reasons include administrative excuses and grave illness.
      (2) It is the student's responsibility to contact the lab instructor immediately concerning absences and arranges to make up the work during another scheduled laboratory period that week. A written explanation is mandatory. The instructor then determines whether or not the absence is excused and, if applicable, make arrangements for makeup. The student should contact the instructor as soon as any anticipated absence is known. This advance planning makes makeup much easier and improves faculty-student relations.
      (3) Failure to submit the absence form may result in forfeiting the privilege of any makeup. Failure to complete makeup work when scheduled will result in reduced credit.
   b. Unexcused
      (1) Unexcused absences result in lowering of the semester average. Examples of unexcused absences include early departure and late return from vacations.
      (2) There are no free cuts in lab! More than three lab absences, whether excused or unexcused, result in an "F" or an "I" (incomplete) for the course, depending upon completeness of other work. "I's" must be satisfactorily completed the following semester by completing the missed labs. Every unexcused lab absence will lower the semester average five percent (5%).

3. Other Policies and/or Procedures
   This course involves experimental and observational 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, classification, behavior, and ecology. Principles of Biology Laboratory is a one-semester course designed for non-majors as the recommended life science course to accompany BIO 101 for the general education requirement.

VI. COURSE CALENDAR

WEEK	TOPIC
Week 1	Analyzing and practicing scientific methods A. Analyzing experimental designs of LT experiments B. Powers of observation exercise
Week 2	Set Up Long-Term Experiments (one LT Lab/Section)
Week 3	Characteristics of Life. Microscopic Analysis of Pond Water Metric Measurement
Week 4	Plant and Animal Behavior
Week 5	Ecological Relationships, Predator-Prey Model
Week 6	Use of Microscope, Plant and Animal Cell Structure and Function
Week 7	Environmental Relationships and Problems
Week 8	Diffusion
Week 9	DNA Structure & Replication
Week 10	Cell Division A. Mitosis B. Meiosis
Week 11	Genetics I Mendelian Inheritance and Probability
Week 12	Genetics II Human Genetics
Week 13	Long-term Experiments
Week 14	Reproduction & Development
Week 15	Laboratory Practical Exam
Week 16	Finals

VII. ASSESSMENT SUMMARY

Dr. Richard Seaman
Name of Instructor

Biology 101
Course No.

Principles of Biology Laboratory
Title of Course

Biology
Name of Department

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

MAJOR OUTCOMES

Analysis/Problem Solving

Be proficient in biology by acquisition or 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.

COURSE GOALS

The primary course goal is to recognize the value and the limitation of the scientific method as it applies to contemporary issues.

To become familiar with the general characteristics of living organisms and be able to study them at various levels of organization using both a mechanistic and systems approach.

To become more mature and effective in problem solving activities as it applies to environmental, social, and ethical issues.

ASSESSMENT OF COURSE GOALS

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Students are evaluated on their observational skills using an invisible bird exercise, as well as an exercise where they determine the "pecking order" in a flock of chickens.

Students are evaluated using weekly quizzes that cover the previous weeks' material. A laboratory problem solving exercise on plant seed germination is also an important evaluation tool.

CRITERIA

Demonstrate level of understanding by demonstrating an ability to apply scientific principles to biological problems.