Note:

Course content may be changed, term to term, without notice. The information below is provided as a guide for course selection and is not binding in any form, and should <u>not</u> be used to purchase course materials.

LIBERTY UNIVERSITY

COURSE SYLLABUS

BIOL 103

PRINCIPLES OF BIOLOGY LABORATORY

COURSE DESCRIPTION

Laboratory exercises selected to demonstrate basic biological concepts. Emphasis is on plant and animal cell chemistry, composition and function, organismal structure and function, biological diversity and population ecology.

RATIONALE

Principles of Biology Laboratory is designed to show the student many of the principles and organisms studied in Principles of Biology (BIOL 101). The Lab will introduce the student to basic techniques which will be used to examine a diversity of God's creation. Exercises are designed to introduce the student to the scientific method and to have them use it to answer specific questions.

I. PREREQUISITE

For information regarding prerequisites for this course, please refer to the Academic Course Catalog.

II. REQUIRED RESOURCE PURCHASE

Click on the following link to view the required resource(s) for the term in which you are registered: http://bookstore.mbsdirect.net/liberty.htm

III. ADDITIONAL MATERIALS FOR LEARNING

A. Computer with basic audio/video output equipment

B. Internet access (broadband recommended)

C. Blackboard recommended browsers

D. Operating System: Windows XP/Vista/7; or Macintosh OS X 10.2.9 or later

E. Adobe Flash Player, latest version

F. JavaScript enabled

G. Microsoft Word

H. A printer that communicates with your computer

I. A digital camera or camera phone that can transfer images to your computer

J. A variety of common household items as indicated in individual lab exercises

IV. Measurable Learning Outcomes

Upon successful completion of this course, the student will be able to:

A. Apply the Scientific Method to conduct lab experiments on biological processes.

B. Generate lab reports that distinguish data and observations from interpretations.

C. Describe molecular, cellular, and organismal structures and their functions.

D. Apply biological methods to taxonomy and to ecological sampling.

E. Evaluate biblical and materialist explanations for life's diversity using course observations and biological principles.

V. Course Requirements and Assignments

A. Course Requirements Checklist

After reading the Course Syllabus and Student Expectations, the student will complete the related checklist found in Module/Week 1.

B. Discussion Board Forum

Discussion boards are collaborative learning experiences. Therefore, the student will participate in 1 Discussion Board Forum. The student will post a thread of 150 words or fewer that consists of 2 completed tables of data. In the following module/week, the student will continue his/her participation in the Discussion Board Forums by replying to 2 peers' threads in 50 words or fewer. No writing style or citations are required.

C. Activities (14)

The Activities are found in the Assignments section of each module/week. These are procedures that lead the student through the work that is done for each laboratory. The activities result in data for the student to interpret.

D. Assignments (7)

In 7 of the modules/weeks, the student will complete a variety of tasks including: a Kit Inventory, Data Tables, Matching exercise, Drawings, a Graph, Photographs, and Identification Lists. These assignments will be recorded and submitted to the instructor.

E. Quizzes (8)

Each quiz will be open-book/open-notes and will include 10 multiple-choice questions covering the information studied throughout the specified modules/weeks. The student will have 25 minutes to complete each quiz.

VI. COURSE GRADING AND POLICIES

A. Points

Course Requirements Checklist	10
Assignments (6 at 60 pts ea, 1 at 40 pts)	400
Quizzes (8 at 60 pts each)	480
Discussion Board Forum (60 pts/thread, 60 pts/2 replies)	120
Total	1010

B. Scale

A = 900–1010 B = 800–899 C = 700–799 D = 600–699 F = 0–599

C. Disability Assistance

Students with a documented disability may contact Liberty University Online's Office of Disability Academic Support (ODAS) at LUOODAS@liberty.edu to make arrangements for academic accommodations. Further information can be found at www.liberty.edu/disabilitysupport.

VII. BIBLIOGRAPHY

Detwiler, C., Mitchell, K., & Reichenbach, N. (2012). *Life by design.* Belmont, CA: Cengage.

LIBERTY UNIVERSITY

COURSE SCHEDULE

BIOL 103

MODULE/ WEEK	READING & STUDY	ASSIGNMENTS	POINTS
1	PDF: Laboratory Safety Manual 2 PDFs: Faster Plop, Plop, Fizz, Fizz: A Scientific Method Investigation – Background & Activities	Course Requirements Checklist Class Introductions Assignment: Carolina Kit Inventory Quiz 1	10 0 60 60
2	2 PDFs: Biological Macromolecules and Enzymes I – Background & Activities	Assignment: Three Data Tables	60
3	2 PDFs: Biological Macromolecules and Enzymes II – Background & Activities	Quiz 2	60
4	2 PDFs: Cell Structure and Function – Background & Activities 2 presentations	Assignment: Viewing Bacterial Cells Assignment: Two Drawings	40 60
5	2 PDFs: Cellular Respiration in Germinating Pea Seeds – Background & Activities	Quiz 3	60
6	2 PDFs: Exploring Photosynthesis and Plant Pigments – Background & Activities	Quiz 4	60
7	2 PDFs: Cheek Cell DNA Extraction – Background & Activities	Quiz 5	60
8	2 PDFs: Quantitation of DNA – Background & Activities	Assignment: Graph	60
9	2 PDFs: Anatomy of Flowering Plants – Background & Activities	Assignment: Dissection Photographs	60

MODULE/ WEEK	READING & STUDY	ASSIGNMENTS	POINTS
10	2 PDFs: Diversity and Ubiquity of Microbes: Week 1 – Background & Activities	Assignment: Media Preparation	0
11	2 PDFs: Diversity and Ubiquity of Microbes: Week 2 – Background & Activities	Quiz 6	60
12	2 PDFs: Classification of Plants and Fungi – Background & Activities	Assignment: Identification Lists	60
13	2 PDFs: Animal Diversity – Background & Activities 10 presentations	Quiz 7	60
14	2 PDFs: Simulating Methods to Estimate Population Size – Background & Activities	Quiz 8	60
15	PDF: Science as a Way of Knowing	DB Forum Thread	60
16	PDF: Science as a Way of Knowing	DB Forum Replies	60
		TOTAL	**1010**

DB = Discussion Board

NOTE: Each course module/week (except Module/Week 1) begins on Tuesday morning at 12:00 a.m. (ET) and ends on Monday night at 11:59 p.m. (ET). The final module/week ends at 11:59 p.m. (ET) on **Friday**.