

## Principles of Biology Laboratory

### BIOL-103

CG Section 16WK 11/10/2019 to 04/18/2020 Modified 02/16/2022

### Course Description

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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.

#### Requisites

For information regarding prerequisites for this course, please refer to the [Academic Course Catalog](https://catalog.liberty.edu/) (<https://catalog.liberty.edu/>).

### Rationale

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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.

### Course Learning Outcomes

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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.

#### General Education Foundational Skill Learning Outcomes: Social and Scientific Inquiry (SSI)

- A. SSI 1: Demonstrate an understanding of the impact of social and/or natural sciences on the world in which we live.
- B. SSI 3: Apply solutions for a social and/or scientific dilemma experienced in society.
- C. SSI 4: Describe how social and/or scientific inquiry equips human beings to be participants in God's redemptive work

### Course Resources

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Click on the following link to view the required resource(s) for the term in which you are registered: [Liberty University Online Bookstore](https://bncvirtual.com/liberty) (<https://bncvirtual.com/liberty>).

#### Additional Materials for Learning

- A. Computer with basic audio/video output equipment
- B. Internet access (broadband recommended)
- C. Canvas [recommended browsers](https://community.canvaslms.com/t5/Canvas-Basics-Guide/What-are-the-browser-and-computer-requirements-for-Canvas/ta-p/66) (<https://community.canvaslms.com/t5/Canvas-Basics-Guide/What-are-the-browser-and-computer-requirements-for-Canvas/ta-p/66>)
- D. Microsoft Word
- E. Operating System: Windows XP/Vista/7; or Macintosh OS X 10.2.9 or later

- F. Adobe Flash Player, latest version
- G. JavaScript enabled
- 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

## Course Assignments

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### Experiment Manuals, Readings, and Presentations

#### Course Requirements Checklist

After reading the Syllabus and [Student Expectations \(https://www.liberty.edu/institutional-effectiveness/student-expectations/\)](https://www.liberty.edu/institutional-effectiveness/student-expectations/), the student will complete the related checklist found in the Course Overview.

#### Discussion: Empirical and Historical Science

Discussions are collaborative learning experiences. The student will post a thread of 150 words or fewer that consists of 2 completed tables of data. The student will reply to 2 peers' threads in 50 words or fewer.

#### Lab Activity Assignments (8)

The student will submit a variety of data from the lab kit's experiments. This assignment aligns with the following FSLOs: SSI 1, SSI 3, SSI 4

#### 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.

## Course Grading

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Course Requirements Checklist	10
Discussion: Empirical and Historical Science	60
Lab Activities (7 at 60 pts ea, 1 at 40 pts)	460
Quizzes (8 at 60 pts ea)	480
<b>Total</b>	<b>1010</b>

## Policies

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### Late Assignment Policy

Course Assignments, including discussions, exams, and other graded assignments, should be submitted on time.

If the student is unable to complete an assignment on time, then he or she must contact the instructor immediately by email.

Assignments that are submitted after the due date without prior approval from the instructor will receive the following deductions:

1. Late assignments submitted within one week after the due date will receive up to a 10% deduction.
2. Assignments submitted more than one week and less than 2 weeks late will receive up to a 20% deduction.

3. Assignments submitted two weeks late or after the final date of the course will not be accepted outside of special circumstances (e.g. death in the family, significant personal health issues), which will be reviewed on a case-by-case basis by the instructor.
4. Group projects, including group discussion threads and/or replies, and assignments will not be accepted after the due date outside of special circumstances (e.g. death in the family, significant personal health issues), which will be reviewed on a case-by-case basis by the instructor.

## Disability Assistance

Students with a disability and those with medical conditions associated with pregnancy may contact Liberty University's Online Office of Disability Accommodation Support (ODAS) at [LUOODAS@liberty.edu](mailto:LUOODAS@liberty.edu) for accommodations. Such accommodations require appropriate documentation of your condition. For more information about ODAS and the accommodations process, including how to request an accommodation, please visit <https://www.liberty.edu/online/online-disability-accommodation-support/> (<https://www.liberty.edu/online/online-disability-accommodation-support/>). Requests for accommodations not related to disabilities or pregnancy must be directed to the Registrar's Office, which generally handles medical needs support.

If you have a complaint related to disability discrimination or an accommodation that was not provided, you may contact ODAS or the Office of Equity and Compliance by phone at (434) 592-4999 or by email at [equityandcompliance@liberty.edu](mailto:equityandcompliance@liberty.edu). Click to see a full copy of Liberty's [Discrimination, Harassment, and Sexual Misconduct Policy](https://www.liberty.edu/media/1226/Liberty_University_Discrimination_Harassment_and_Sexual_Misconduct_Policy.pdf) ([https://www.liberty.edu/media/1226/Liberty\\_University\\_Discrimination\\_Harassment\\_and\\_Sexual\\_Misconduct\\_Policy.pdf](https://www.liberty.edu/media/1226/Liberty_University_Discrimination_Harassment_and_Sexual_Misconduct_Policy.pdf)) or the [Student Disability Grievance Policy and Procedures](http://www.liberty.edu/media/8021/Disability_Grievance_Procedures.pdf) ([http://www.liberty.edu/media/8021/Disability\\_Grievance\\_Procedures.pdf](http://www.liberty.edu/media/8021/Disability_Grievance_Procedures.pdf)).

## Course Attendance

In an effort to comply with U.S. Department of Education policies, attendance is measured by physical class attendance or any submission of a required assignment within the enrollment dates of the course (such as examinations, written papers or projects, any discussion posts, etc.) or initiating any communication with one's professor regarding an academic subject. More information regarding the [attendance policy](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FOnline%2BAttendance%2BAnd%2BNon-Attendance&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613719138&sdata=%2BNBTsPOoXuHAPLfISQRugK7cRSuV6UyC7qD3agf3l2k%3D&reserved=0) (<https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FOnline%2BAttendance%2BAnd%2BNon-Attendance&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613719138&sdata=%2BNBTsPOoXuHAPLfISQRugK7cRSuV6UyC7qD3agf3l2k%3D&reserved=0>) can be found in the [Academic Course Catalogs](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.liberty.edu%2Findex.cfm%3FPID%3D791&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=DjjhMiRBFnF%2B2ZJUC8eBd1OdNb26S9ADukODYsilXIA%3D&reserved=0) (<https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.liberty.edu%2Findex.cfm%3FPID%3D791&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=DjjhMiRBFnF%2B2ZJUC8eBd1OdNb26S9ADukODYsilXIA%3D&reserved=0>). Regular attendance in online courses is expected throughout the length of the term. Students who do not attend within the first week of a sub-term by submitting a required academic assignment (such as the Course Requirements Checklist, an examination, written paper or project, discussion post, or other academic activity) will be dropped from the course. Students who wish to re-engage in the course are encouraged to contact Academic Advising to discuss their enrollment options. Students who begin an online course, but at some point in the semester cease attending, and do not provide official notification to withdraw, will be assigned a grade of "FN" ([Failure for Non-Attendance](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FUnofficial%2BWithdrawals&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=MoMvZdPfza69InuhVHMHAVgu59ZP0Fw45xJTU9PIBrU%3D&reserved=0) (<https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FUnofficial%2BWithdrawals&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=MoMvZdPfza69InuhVHMHAVgu59ZP0Fw45xJTU9PIBrU%3D&reserved=0>)). Students wishing to withdraw from courses after the official start date should familiarize themselves with the [withdrawal policy](#).

## Grading Scale

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

For courses with a Pass/NP final grade, please refer to the Course Grading section of this syllabus for the assignment requirements and/or point value required to earn a Passing final grade.

## Add/Drop Policy

The full policy statement and procedures are published in the [Policy Directory \(https://wiki.os.liberty.edu/display/IE/Dropping+and+Adding+Online+Classes\)](https://wiki.os.liberty.edu/display/IE/Dropping+and+Adding+Online+Classes).

## Honor Code

Liberty University comprises a network of students, Alumni, faculty, staff and supporters that together form a Christian community based upon the truth of the Bible. This truth defines our foundational principles, from our Doctrinal Statement to the Code of Honor. These principles irrevocably align Liberty University's operational procedures with the long tradition of university culture, which remains distinctively Christian, designed to preserve and advance truth. Our desire is to create a safe, comfortable environment within our community of learning, and we extend our academic and spiritual resources to all of our students with the goal of fostering academic maturity, spiritual growth and character development.

Communities are predicated on shared values and goals. The Code of Honor, an expression of the values from which our Doctrinal Statement was born, defines the fundamental principles by which our community exists. At the core of this code lie two essential concepts: a belief in the significance of all individuals, and a reliance on the existence of objective truth.

While we acknowledge that some may disagree with various elements of the Code of Honor, we maintain the expectation that our students will commit to respect and uphold the Code while enrolled at Liberty University.

Adherence to the principles and concepts established within facilitates the success of our students and strengthens the Liberty community.

The Code of Honor can be viewed in its entirety at <http://www.liberty.edu/index.cfm?PID=19155> (<http://www.liberty.edu/index.cfm?PID=19155>).

## Additional Items

### Bibliography

Detwiler, C., Mitchell, K., & Reichenbach, N. (2012). *Life by design*. Belmont, CA: Cengage. ISBN: 9781111219918.

## Schedule

When	Topic	Notes
Course Overview	Student Acknowledgements	Course Requirements Checklist
Module 1: Week 1	Learn	Read: 2 items Watch: 1 item
	Apply	Lab Activity: Carolina Kit Inventory Assignment Quiz: The Scientific Method
Module 2: Weeks 2 - 3	Learn	Read: 1 item Watch: 1 item
	Apply	Lab Activities: Data Tables Assignment Quiz: Biological Molecules and Enzymes
Module 3: Week 4	Learn	Read: 1 items Watch: 2 items
	Apply	Lab Activity: Viewing Bacterial Cells Assignment Lab Activity: Two Drawings Assignment

When	Topic	Notes
<b>Module 4: Week 5</b>	Learn	Read: 1 item Watch: 1 item
	Apply	Quiz: Respiration
<b>Module 5: Week 6</b>	Learn	Read: 1 item Watch: 2 items
	Apply	Quiz: Photosynthesis
<b>Module 6: Week 7</b>	Learn	Read: 1 item Watch: 1 item
	Apply	Quiz: DNA Information
<b>Module 7: Week 8</b>	Learn	Read: 1 item Watch: 1 item
	Apply	Lab Activity: Graph Assignment
<b>Module 8: Week 9</b>	Learn	Read: 1 item Watch: 1 item
	Apply	Lab Activity: Anatomy of Flowering Plants Virtual Lab Assignment
<b>Module 9: Weeks 10 - 11</b>	Learn	Read: 1 item Watch: 1 item
	Apply	Quiz: Microbes: Diversity
<b>Module 10: Week 12</b>	Learn	Read: 1 item Watch: 1 item
	Apply	Lab Activity: Identification Lists Assignment
<b>Module 11: Week 13</b>	Learn	Read: 2 items Watch: 10 items
	Apply	Quiz: Animal Diversity
<b>Module 12: Week 14</b>	Learn	Read: 1 item Watch: 2 items
	Apply	Lab Activity: Squid Dissection Photographs Assignment
<b>Module 13: Week 15</b>	Learn	Read: 1 item Watch: 1 item
	Apply	Quiz: Ecology
<b>Module 14: Week 16</b>	Learn	Read: 1 item Watch: 2 items

When	Topic	Notes
	Apply	Discussion: Empirical and Historical Science