SEMESTER
Life and Natural Sciences Department
School of Science, Technology, Engineering, and Mathematics

Program Name: **Biology**
Course Name: **General Biology 1 - Laboratory**
Course Number: **BIO201** **Section: BXX**
Meeting Day(s) & Time(s):
Credits: 5
Text: *Exploring Biology in the Laboratory, 3nd edition,* Pendarvis and Crawley, Morton Publishing, 2018.
Instructor Name:
Office Hours & Location:
Owens CC Email:**
Phone:
Additional Contact:
**Please use only Owens email for course communications

CATALOG DESCRIPTION: The first of a two-semester curriculum designed for students planning to major in Biology. The first semester includes introductions to animal and plant cell structure and function, biochemistry and metabolism, Mendelian and molecular genetics, and evolution. (Can fulfill Sciences requirements for Arts and Sciences degree programs.) Students retaking this course must repeat both the lab and lecture. (Lecture offered as a web course but lab must be taken on campus). This course is not recommended for students in developmental reading.

COREQUISITES: None
PREREQUISITES: CHM095 or equivalent

Textbooks, Materials, Equipment

- *Exploring Biology in the Laboratory, 3nd edition,* Pendarvis and Crawley, Morton Publishing, 2018.
- Colored pencils (recommended)

Your **print book, e-book, or access code** required for class can be accessed through the Owens Community College e-Campus Bookstore by accessing the online link, called "Find Books" on the course schedule for each course section.

GENERAL INFORMATION

Learning Outcomes

By completing this course, the student should be able to:

- Identify and describe the principles of chemistry that are involved in physiological processes shared by all living organisms.
- Identify the components of cells and understand the functions of these components.
- Describe how organisms capture, store and use energy.
- Describe the principles of how organisms reproduce, including the chemical nature of DNA and other nucleic acids.
- Describe how organisms interact with their environment and identify forces that might alter this interaction.
- Describe the principles of Darwinian evolution.
- Describe how organisms are classified.
- Read and study science, and recognize contributors to biology.

Laboratory Objectives

This laboratory is associated with the lecture portion of BIO201. Students will acquire a familiarity with standard biological techniques and procedures.

- Be able to use both dissecting and compound microscopes.
- Be able to construct competent laboratory reports through conclusions drawn from lab.
- Identify the components of cells and understand the functions of these components.
- Describe how organisms capture, store and use energy.
- Be able to understand basic fundamentals of genetics.
- Understand biotechnology, including the chemical nature of DNA and nucleic acids.
- Describe how organisms interact with their environment and identify forces that might alter this interaction.
- Describe the processes of mitosis and meiosis and know the differences between them.
- Describe the principles of the Darwinian evolution.

Grading

Evaluation

The laboratory grade will be based on assignments and exams.

4 Reports (20 points each)	80 points
7 Question sets (10 points each)	60 points*
Exam 1	30 points
Exam 2	30 points
* Lowest question set (10 points) will automatically be dropped	
Total	200 point

IMPORTANT: You must earn no less than 120 points (60%) out of the 200 total possible laboratory points to pass the entire course. If you do not earn at least 120 laboratory points, you will receive an (F) letter grade for the entire course.

There is absolutely NO provision for any EXTRA CREDIT to be given beyond the designated points for each laboratory exam and activity.

- Students retaking the course must repeat both the lecture and the laboratory portion.
- The laboratory grade is worth 40% of overall BIO201 grade.

Reports and Question Sets

A complete report or question set will be specifically assigned for each experiment performed. See the attached weekly schedule.

Each report will be graded on a 20-point scale. Each question set will be graded on a 10-point scale. Both questions sets and reports are due at the beginning of the next laboratory session.

The lowest question set score will be dropped. Seven question sets will be completed and the lowest score will be dropped. **There are NO make-up laboratory sessions.**

You will not receive any points for any of the work from a missed laboratory session.

All assignments are due at the beginning of laboratory period following the lab in which the assignment was given. Late assignments will receive a 10% deduction from the grade earned for each day late. Any assignment over 1 week late will receive a zero (0%) grade. Laboratory assignments will not be accepted at the Life and Natural Sciences Department offices.

Exams

The exams will each consist of 30 questions. Each question will be worth 1 point for a total of 30 points.

The exam questions will be comprised from material covered in the laboratory manual, experiments, and laboratory lectures. Exams could include the following types of questions: multiple-choice, fill-in the blank, short essay and will primarily be practical in format.

- Exam 1 (Activity 6) will cover Activities 1 through 5.
- Exam 2 (Activity 13) will cover remaining activities
- Exam 2 is NOT comprehensive.
- There will be NO open book or open notes allowed for the exams.

The student MUST contact the laboratory instructor within 1 week of missing Exam 1 in order to make arrangements for a make-up exam. If a student misses Exam 2, the student must contact the instructor on the day of the missed exam. A student who misses a laboratory exam may choose one of the following options:

- Take an essay exam by the date and time as assigned by the instructor. **All make-up exams will be in an essay format.**
- Not take the exam and receive 0 points.

Devices
Phones and other electronic communication devices must be in silent mode during class. Unauthorized use of a phone, e-watch or tablet is not permitted during an exam. Use of these devices could result in forfeiture of exam points. Phones cannot be substituted for calculators.

Course Rules

Attendance

Attendance is taken at each laboratory session. If you are more than 30 minutes late for a laboratory you will not be permitted to attend that session. During the first 30 minutes your instructor covers the basic information necessary to successfully complete the laboratory, mandatory safety issues, precautions and location of materials needed. After the session has begun, for safety purposes, your instructor needs to be working with all students, not covering the information for those students who are late. Therefore, if you are more than 30 minutes late, you will not be permitted to attend the laboratory and will be counted absent. You are encouraged to obtain missed information from other students in the laboratory.

You will not be permitted to submit laboratory assignments for sessions in which you have been counted absent.

To achieve success in this course, laboratory attendance is critically important.

- You will not receive any points for any of the work from a missed laboratory session.

- You are ONLY permitted to attend the laboratory section in which you are registered.
- There are no make-up laboratory sessions.

Safety

- **Eating, drinking and smoking are not permitted in the laboratory.**
- You must be registered for the laboratory section which you are attending. Non-registered persons are not permitted in the laboratory.
- Appropriate apparel is required in the laboratory at all times, including; cotton shirts, jeans, proper foot covering, proper shoes, etc.
- Loose clothing, shorts, sandals, open-toed shoes are not permitted.
- Full covering laboratory aprons are available as needed.
- More about apparel will be discussed at the first laboratory meeting.
- **Safety goggles MUST BE WORN while experiments are being conducted. The laboratory instructor will announce when goggles may be removed. The appropriate eyewear must be splash goggles, which are provided to each student. NO impact glasses are to be worn at any time.**

Student Responsibilities

- Read the laboratory assignment and appropriate lecture material prior to each laboratory session. It is recommended that a laboratory notebook be kept to record observations, experimental results and instructor notes.
- Be on time and use the full laboratory period. Turn in all work as assigned.
- Ask questions and participate in each activity.
- **CLEAN UP:** Be certain that your area of the laboratory table is properly cleaned after use. Wash and return all glassware and other instruments to the proper areas. Check the sink to be sure that it is clear of all glassware and trash.

Activities

Activity 1: **Chapter 1**: The Starting Point – Understanding the Scientific Method;
Chapter 2: For Good Measure and Laboratory Report Writing.
Question Set – 10 points
Activity 2: **Chapter 5**: The Composition of Living Things – Understanding Organic Molecules. ***Report – 20 points***
Activity 3: **Chapters 3:** The Invisible World; **Chapter 6**: The Building Blocks of Life – Microscopy and Cells. ***Question Set – 10 points***
Activity 4: **Chapter 8:** Just Passing Through – Diffusion and Osmosis. ***Report – 20 points***
Activity 5: **Chapters 7:** Catalysts for Change – Enzymes; **Chapter 4**: Back to Basics – pH. ***Question Set – 10 points***
Session 6: **Exam 1 – 30 points**
Activity 7: **Chapter 10**: Breaking Bonds – Cellular Respiration. ***Report – 20 points***
Activity 8: **Chapter 9**: From Light to Energy – Photosynthesis. ***Question Set – 10 points***
Activity 9: **Chapters 11:** Out of One, Many – Mitosis, **Chapter 12:** That's Just the Half of It – Meiosis. ***Question Set – 10 points***

Activity 10: **Chapter 13** – It's All in the Genes – Mendelian Genetics (and Blood Typing – separate packet). ***Question Set - 10 points***
Activity 11: **Chapter 14:** Unraveling the Double Helix – DNA (and gel electrophoresis separate packet), **Chapter 15:** Touching the Future- Understanding Biotechnology and Forensics (and Bacterial Transformation – separate packet) ***Report – 20 points***
Activity 12: **Chapter 16**: Mysteries of Mysteries – Evolution. ***Question Set – 10 points***
Session 13: **Exam 2 – 30 points**

BIOLOGY LABORATORY REPORT FORMAT

Reports are to be typed; no handwritten reports will be accepted. Reports are to be entirely **in YOUR OWN WORDS**!! Do not copy directly from the lab manual. Use proper reference methods if you must paraphrase. You should write in complete sentences and in paragraph form. Do not list materials or methods or observations using dots, dashes, or numbers. You should use **ONLY** the subtitles given in the outline below; do not further subdivide your reports. You should write in the **PAST TENSE**; you are writing about an experiment already performed/completed.

TITLE PAGE: 1 Point – A separate page is not required. All of the following information should be at the top of the first page; your name, course section, section number, instructor's name, date, and title of the experiment.

INTRODUCTION: 1-2 Paragraphs, 4 points – You should present information that will be used as a foundation of your understanding of the ideas you will use to interpret your data (**background**). You should state the **objective** (purpose) of the experiment (i.e., what is the experiment designed to test?) in **YOUR OWN WORDS**! You should state your **hypothesis**, an educated guess of what you expect to happen.

PROCEDURE: 1-2 Paragraphs, 2 points – Describe the experimental setup. This section should be detailed enough so that someone who knows nothing about the experiment could duplicate the procedure. You should not refer to procedure numbers from the laboratory manual. You are to describe your method of data collection (# trials, time elapsed, etc.), summarizing what you did to perform the experiment. **YOU SHOULD NOT INCLUDE RESULTS HERE!**

RESULTS: 1-2 Paragraphs, 5 points – You are to present the results of the experiment in **both** paragraph and figure and/or table form. Reproduce tables/figures from the laboratory manual. **YOU SHOULD NOT** cut up your laboratory manual or turn in handouts as part of your write-up. Tables and figures should have proper labels and **DESCRIPTIVE** titles. Tables should be titled at the **TOP**; figures (including graphs) at the **BOTTOM** (see the examples on the next page). Graphs should be presented on graph paper. Proper scientific units should be indicated on data. Illustrations should have magnification powers, labels, and titles. You are to refer to **EVERY** table and figure included in your report by number (e.g. Table 1). Re-number any tables/figures from the laboratory manual to fit your report. You should **BRIEFLY** summarize the results here, but you should **NOT INTERPRET OR DISCUSS THE RESULTS IN THIS SECTION!**

DISCUSSION: 2-3 (or more as needed) Paragraphs, 6 points
THIS IS THE MOST IMPORTANT SECTION OF YOUR LAB REPORT!! You are to interpret and discuss your data and relate your results to the background information from the Introduction

section of your report. You should explain **WHY** you think you obtained the results that you did. Did the results **SUPPORT** (**DO NOT** use the word "**Prove**") your hypothesis? If not, explain **WHY NOT**? Discuss significant experimental errors that may have caused unexpected results. This section is your chance to demonstrate how well you understood your techniques and results. **You should use your critical thinking skills**.

CONCLUSION: 1-2 Paragraphs, 2 points – You are to briefly summarize the details of the results and what was learned from doing this experiment. This section could include a discussion of the strengths and weaknesses of your experiment. You may wish to suggest ways the experiment could be improved; however, editorials or complaints are **NOT** appropriate in a scientific paper.

Table Number

Table Title

Caption

Table 1. Beetle Predation Data for Two Different Habitats. Habitat #1 is a brown carpet and Habitat #2 is a gray-speckled tile floor. P1-P4 represent generations 1 through 4. Numbers represent counts of "beetles" as simulated by three types of beans.

		Habitat #1				Habitat #2			
		Lima	**Pinto**	**Kidney**	**Total**	**Lima**	**Pinto**	**Kidney**	**Total**
	P1	10	10	10	30	10	10	10	30
B	"eaten"	5	8	7	20	3	8	9	20
C	"survivors" (A	5	2	3	10	7	2	1	10
D	"offspring"	10	4	6	20	14	4	2	20
E	P2 (C + D)	15	6	9	30	21	6	3	30
F	"eaten"	8	4	8	20	14	4	2	20
G	"survivors" (E	7	2	1	10	7	2	1	10
H	"offspring"	14	4	2	20	14	4	2	20
I	P3 (G + H)	21	6	3	30	21	6	3	30
J	"eaten"	14	4	2	20	12	5	3	20
K	"survivors" (I –	7	2	1	10	9	1	0	10
L	"offspring"	14	4	2	20	18	2	0	20
M	P4 (K + L)	21	6	3	30	27	3	0	30

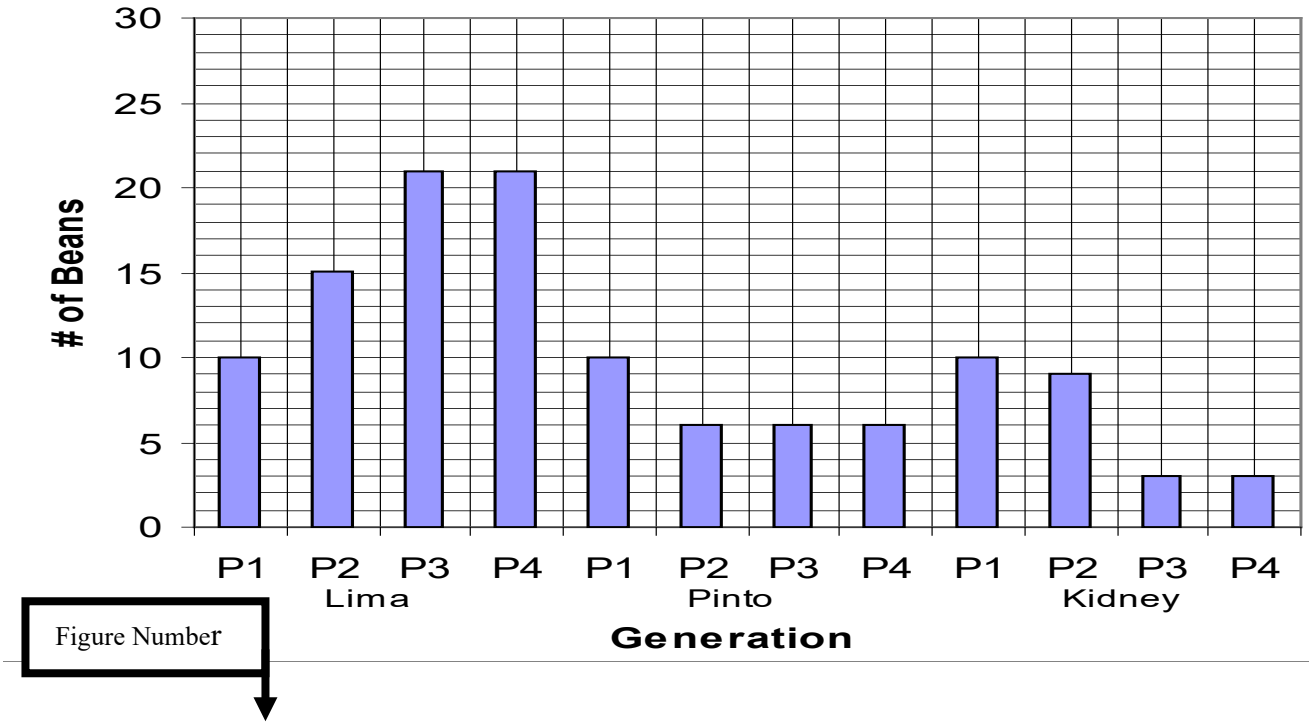

Figure 1. Summary of Beetle Captures in Habitat #1 (Brown Carpet). P1-P4 represent generations 1 through 4.

Figure Title

Caption

Policy for Acquisition and Care of Animals and Preserved Specimens

The Owens Community College Science Department recognizes that one of the major goals of life science education is to instill respect and appreciation for all living organisms and their environment. We believe you have a right to expect and we assure you that all preserved animals and specimens used are legally and properly obtained as required by applicable government regulations. All animals were euthanized humanely, under the guidance of consulting veterinarians.

GENERAL COLLEGE INFORMATION

Academic Support

Disability Services Resource Center: If you have a disability or acquire one, you may be entitled to receive reasonable accommodations intended to assure you an equal opportunity to participate in and benefit from the program. To receive more information or to register for accommodations, please contact the Disability Resource Center at 567-661-7007, email disability@owens.edu, visit https://www.owens.edu/disability/, or stop by College Hall 124.

Tutoring Services: Owens Community College offers academic tutoring and assistance in a variety of subjects including: accounting, computing, economics, mathematics, science, and writing. For more information go to: https://www.owens.edu/successcenters/.

Counseling Services: Counseling Services provides assistance to students experiencing personal, educational, interpersonal/relationship, family, social, or psychological difficulties. If you feel you may benefit from this service, please contact them at counselingservices@owens.edu. More information is at https://www.owens.edu/counseling/.

Campus and Community Connections: The Center for Campus and Community Connections (College Hall 151) is a walk-in office created to provide retention support through resource stability initiatives and community connections. Go here for more information: https://www.owens.edu/connection/ or contact connections@owens.edu

Owens Library: The Owens Library offers two locations (Toledo and Findlay) as well as online resources. For more information visit https://www.owens.edu/library/.

Students can find more information on campus resources, student support, student life and security at this link.

General Information

Student Code of Conduct: All students are expected to follow Owens Community College's Student Code of Conduct, which includes academic honesty, encompassing plagiarism. See the Board Policy for more information.

Anti-Discrimination and Harassment & Title IX/Sexual Misconduct: All students, faculty, and staff are expected to follow Owens Community College's Anti-Discrimination and Harassment Policy and the College's Title IX Policy/Sexual Misconduct Procedures and Guidelines. The College strictly prohibits and will not tolerate harassment, discrimination, intimidation, or hostile/offensive working or learning environments.

Religious Accommodations: A student seeking an accommodation for an absence permitted under Ohio's Testing Your Faith Act must provide the instructor with a written email notice with the specific dates for an absence, and must do so not later than fourteen (14) days after the first day of instruction. Alternative accommodations are not retroactive, and no academic penalty will be imposed for an absence under the policy*. The request for an alternative accommodation will be kept confidential. Students with questions about a religious accommodation under Ohio's Testing your Faith Act may contact the College's Office of Academic Affairs: provost@owens.edu
The policy may be found on the Owens website: 3358:11-2-63 Accommodation for a Student Absence for the Observance of Religious Beliefs and Practices Policy

Document Collection: Throughout the semester, your instructors may ask for a variety of

assignments including tests and/or quizzes for student learning of institutional general education competencies or program assessment. Please save all your class materials until the end of the semester.

Classroom Admittance: OCC classes shall only be attended by the officially registered OCC students or perspective students, instructor of record, guest lecturer, or substitute. Visitors are not permitted to be in the classroom and should not be invited to attend or participate in the class. See FERPA regulations for more information.

Use of AI Tools: This course permits you to use artificial intelligence (AI) tools, such as chatbots, text generators, paraphrasers, summarizers, or solvers, to get guidance on assignments, as long as you do so in an ethical and responsible manner. Essentially, you can think of these tools as ways to help you learn but not to entirely create work for assignments like discussion board posts, essays, presentation slides, and so on. AI is more like your tutor or TA, not a replacement for your independent thinking.
This means that you must:

- Not use AI tools to replace your own thinking or analysis or to avoid engaging with the course content.
- Cite or explain any AI tools you use. Provide the name of the AI tool, the date of access, the URL of the interface, and the specific prompt or query you used to generate the output.
- Be transparent and honest about how you used the AI tool and how it contributed to your assignment. Explain what you learned from the AI tool, how you verified its accuracy and reliability, how you integrated its output with your own work, and how you acknowledged its limitations and biases.

You are accountable for any mistakes or errors made by the AI tool. Always check and edit the output before submitting your work. If you discover any inaccuracies or inconsistencies in the output after submission, notify the instructor immediately and correct them as soon as possible.

Using AI tools in an unethical or irresponsible manner, such as copying or paraphrasing the output without citation or transparency, using the output as your own work without verification or integration, or using the output to misrepresent your knowledge or skills, is considered a form of academic dishonesty and will result in a zero grade for the assignment and possible disciplinary action. If you have any questions about what constitutes ethical and responsible use of AI tools, please consult with the instructor **before** submitting your work.

NOTE: Some instructors will also list specific acceptable and unacceptable uses or include a statement like “All written assignments, projects, and exams must be completed independently.”

Laboratory Schedule Monday – Saturday*

Laboratory Section DAY	Laboratory Section DAY	Laboratory Section DAY
Activity 1 - DATE	Activity 1 - DATE	Activity 1 - DATE
Activity 2- DATE	Activity 2- DATE	Activity 2- DATE
Activity 3- DATE	Activity 3- DATE	Activity 3- DATE
Activity 4- DATE	Activity 4- DATE	Activity 4- DATE
Activity 5- DATE	Activity 5- DATE	Activity 5- DATE
Activity 6- DATE	Activity 6- DATE	Activity 6- DATE
Activity 7- DATE	Activity 7- DATE	Activity 7- DATE
Activity 8- DATE	Activity 8- DATE	Activity 8- DATE
Activity 9- DATE	Activity 9- DATE	Activity 9- DATE
Activity 10- DATE	Activity 10- DATE	Activity 10- DATE
Activity 11- DATE	Activity 11- DATE	Activity 11- DATE
Activity 12- DATE	Activity 12- DATE	Activity 12- DATE
Activity 13- DATE	Activity 13- DATE	Activity 13- DATE
Laboratory Section DAY	Laboratory Section DAY	Laboratory Section DAY
Activity 1 - DATE	Activity 1 - DATE	Activity 1 - DATE
Activity 2- DATE	Activity 2- DATE	Activity 2- DATE
Activity 3- DATE	Activity 3- DATE	Activity 3- DATE
Activity 4- DATE	Activity 4- DATE	Activity 4- DATE
Activity 5- DATE	Activity 5- DATE	Activity 5- DATE
Activity 6- DATE	Activity 6- DATE	Activity 6- DATE
Activity 7- DATE	Activity 7- DATE	Activity 7- DATE
Activity 8- DATE	Activity 8- DATE	Activity 8- DATE
Activity 9- DATE	Activity 9- DATE	Activity 9- DATE
Activity 10- DATE	Activity 10- DATE	Activity 10- DATE
Activity 11- DATE	Activity 11- DATE	Activity 11- DATE
Activity 12- DATE	Activity 12- DATE	Activity 12- DATE
Activity 13- DATE	Activity 13- DATE	Activity 13- DATE

**This is the master schedule for all Life and Natural Sciences Department laboratory sections.*

The instructor reserves the right to amend this syllabus as necessary and will communicate amendments to students in the course.