

FOUNDATIONS OF BIOLOGY LAB 1

BIOSC 0050 ♣ Fall 2016

SYLLABUS (PART I)

Instructor Name: _____ **e-mail:** _____

Day/Time/ Room #: _____

Laboratory Manual: Foundations of Biology I Laboratory Manual, fourth edition, with custom Laboratory Notebook, University of Pittsburgh, Hayden-McNeil Publisher, 2015, ISBN: 978-0-7380-7959-2

COURSE DESCRIPTION

This one-credit course is the first in a two-course sequence designed to be an introduction to scientific inquiry in the biological sciences for majors in biology and related fields. Learning through inquiry in the laboratory means that you will be given instruction in a set of research tools and techniques suitable for a particular area of study. You will apply these tools and techniques to carry out experiments that are at least in part of your own design. A series of multi-week modules provides the framework for your investigations. Module topics include the chemical and structural characteristics of life, the activity of enzymes found within cells, and key metabolic processes such as photosynthesis.

The overarching goal of this course is to provide practice with basic skills for doing science. Ideally your work in this course will help you develop an understanding of science as an active and creative process and an evidence-based way of thinking.

This course will prepare you for more in-depth scientific inquiry in either BIOSC 0060 (Foundations of Biology Lab 2) or BIOSC 0067 (Foundations of Biology Research Lab 2).

COURSE OBJECTIVES

Throughout this course, you will:

- practice quantitative reasoning
- keep scientific records in the form of a laboratory notebook
- design experiments, including writing testable hypotheses, making predictions, identifying variables and determining proper controls
- analyze data and draw conclusions based on data
- communicate the findings of your experiments, both orally and in writing, including designing figures for presentation
- collaborate with peers

Students will work in diverse collaborative teams in lab, gain an appreciation of the value of team work in science, demonstrate cultural sensitivity in their interactions with team members, and promote an open exchange of ideas in an inclusive learning community.

PREREQUISITES

BIOSC 0050 has a pre-requisite lecture course, BIOSC 0150, which must be completed with a grade of C (not C-) or better prior to taking BIOSC 0050. The lecture and laboratory are separate courses with different learning objectives. The content of the laboratory may at times overlap with that encountered in lecture, but this will not always be the case.

A grade of C (not C-) or above in this course is required for most majors, including biology majors. Successful completion of this course will prepare you for BIOSC 0060 or BIOSC 0067.

REQUIRED MATERIALS

- Laboratory Manual: Foundations of Biology I Lab Manual, Fourth edition, 2015
- Laboratory Notebook: Foundations of Biology I Lab Notebook, 2015 (Manual and Notebook package: ISBN 978-0-7380-7959-2)
- Folder or Small Binder for storing graded assignments and quizzes
- Access to Computer Software: Microsoft Excel® for graphing assignments
Adobe Acrobat® for download of assignment files
Microsoft PowerPoint® for creating presentations
- Calculator, Metric Ruler
- Other materials will be provided as needed. If you wish to bring your own goggles, you may do so.
- Recommended Textbook: *Biological Science*, by Scott Freeman, 5th edition (or newer), Pearson / Benjamin Cummings, 2014. *[While not required, the text is helpful and copies are on reserve for your use in Langley Library.]*

STUDENT GRADES

A variety of assessments are part of this course including lab notebook entries, assignments, quizzes, and presentations. Quizzes are cumulative, assessing skills learned across the semester. The total number of points earned on assessments determines the final grade. You should monitor your progress in the course by keeping track of your earned points, using the form on the back page of the Course Schedule (Part II of the Syllabus). If you become concerned about your performance in lab, talk to your instructor as soon as possible. Your instructor will not be able to help you after the course ends.

Letter Grades are not assigned until the end of the semester, when student point totals have been submitted by each instructor. The table to the right will help you determine the MINIMUM letter grade that you will receive based on accumulated points. However, we must curve the class based on the performance of individual sections because there are multiple instructors. Therefore, your letter grade may be higher than this scale. The average letter grade in this course is approximately a C+. If the average point total for your lab section is a C+ or higher, your section will receive no adjustment, so do not count on receiving a curve. While overall course grades are sometimes curved up, they are never curved down. If every student accumulates 285 points by the end of the semester, then everyone earns an "A+".

Point Total	Letter Grade
278 - 285	A+
264 - 277	A
257 - 263	A-
249 - 256	B+
235 - 248	B
228 - 234	B-
221 - 227	C+
207 - 220	C
200 - 206	C-
192 - 199	D+
178 - 191	D
171 - 177	D-
0 - 170	F

COURSE ADMINISTRATION

1. **Instructors:** This is a large course with multiple instructors. You must learn your instructor's name and email in order to communicate effectively throughout the semester. Your instructor is your primary contact person. The laboratory setting is informal; instructors and students are referred to by first names. Instructors are glad to meet with you and are pleased to help you. You should not feel shy or embarrassed to ask questions during lab or to come to posted office hours. Do communicate any concerns with your instructor as soon as a problem becomes apparent.

If you have a current problem or condition, or a problem arises that will affect your performance in this course, contact your instructor. Your instructor will either be able to help you immediately or will refer you to the Course Directors. If you cannot reach your instructor, or if you feel that you cannot talk to your instructor about your performance in class, you may contact one of the Course Directors directly.

2. **Course Directors:**

Natasha Baker (A117, Langley, nab74@pitt.edu)

Jean Schmidt (L04 Clapp, schmidtj@pitt.edu)

Elia Crisucci (L06 Clapp, emc22@pitt.edu)

3. **Office Hours:** Lab instructors hold office hours every week in room L02 Clapp Hall. Check the schedule on the door. The schedule is also posted in lab and on CourseWeb. All office hours are open to any student enrolled in the course. Office hours are a time when you may ask questions, review lab work and clarify concepts with an instructor's guidance. You may attend just to "talk biology" even if you do not have any specific questions. Attendance demonstrates your commitment to learning and can certainly support your success in the course. If you need to meet with your specific instructor, for example to clarify assignment expectations or to discuss a graded assignment or your progress in the course, visit office hours during your instructor's scheduled time or contact your instructor directly to set up an appointment.
4. **CourseWeb:** After accessing CourseWeb via <http://courseweb.pitt.edu>, students will login and use the following menu items to access the required information and materials for this course: Announcements, Syllabus (2 Parts), Course Documents, Faculty Information, Turnitin.com Information and Course Safety & Dress Code Information. Check CourseWeb every week in conjunction with Part II of the Syllabus.

COURSE REQUIREMENTS

Attendance – You must attend all laboratory sessions. Each student is registered for one laboratory section that meets once per week for two hours and fifty minutes. You must attend the same lab section each week in the time and location that appears on your schedule. Participation in each lab session for the entire period is mandatory.

Penalty for Absence: Missing any lab or part of a lab results in loss of quiz points as well as points on any assignments and presentations associated with the missed lab.

COURSE REQUIREMENTS (continued)

Attendance – (continued)

Make-up Laboratories: There are no make-up labs. In rare circumstances, you may be permitted to attend another lab section within the regular lab schedule if you bring in a valid excuse AND are approved by Course Director, Natasha Baker.

IF you miss a lab, you MUST:

1. Contact *your* instructor IMMEDIATELY (or ASAP) via email.
2. Contact NATASHA BAKER (nab74@pitt.edu) AS SOON AS POSSIBLE.
3. Make up the lab and complete all work associated with the missed lab.
4. DO NOT wait until the day following the lab that you miss and do not wait until the end of the week. Your lab instructor and Natasha may not be able to help you at the last minute.
5. If you are experiencing a medical illness, seek help and obtain a doctor's excuse. If you do not have a doctor in town, visit Student Health Services.
6. The Course Director and your individual instructor will decide the outcome of the absence on a case-by-case basis.
7. Instructors need to be made aware of pre-approved absences as soon as possible. Communicate these University sanctioned absences (such as applies to university sanctioned athletes and religious holidays) as soon as the absence is anticipated, so that alternative plans can be made for you to complete the lab.
8. Understand that acceptable absences include situations involving *serious* illness, labor (as in *you or your spouse* giving birth, not a family member), death, religious holidays, and participation in University events (i.e. band, athletics, etc.). University events DO NOT include fraternity or sorority events. If you miss class for a reason other than the above acceptable situations, contact your instructor but understand that you may not be granted an excused absence.
9. If you have a problem or situation that affects your attendance, always speak with your instructor and Natasha Baker.
10. If a student accumulates 2 absences, he or she is encouraged to drop the course because successful completion (i.e. a passing grade) is then unlikely.

Preparation and Participation – Students are expected to devote two to three hours every week on assignments and study outside of each lab. For example you will complete readings and assignments beforehand to prepare for lab. You will also keep your lab notebook up to date each week and you will complete practice problems to prepare for lab quizzes. Advance preparation and being on time to lab set the stage for effective participation. Your participation during experiments, data collection and group discussion is essential for optimum lab team function, and will lead to mastery of course goals.

Assignments – Assignments include pre-lab assignments designed to introduce the work you are about to do in lab, in-class assignments that include notebook entries, and post-lab assignments in which you analyze and synthesize data collected during lab. Only specially designated assignments will be completed as teamwork. In this course, written assignments are to be completed independently unless explicitly stated on the assignment. This includes notebook entries, data tables and graphs. Although you will work collaboratively as part of a team in lab, you are not to work together with other students on written assignments unless specifically instructed in writing to do so.

COURSE REQUIREMENTS (continued)

Assignments – (continued)

You will be required to submit certain assignments to your instructor in hard copy at the beginning of lab. You will be required to submit other assignments to Turnitin.com (see Turnitin Policy, p.6) by the beginning of lab on the date due. Refer to the specific assignment's instructions for required method of submission.

Late Assignments Do Not Earn Credit:

- Pre-lab Assignments are considered late if they are turned in after class starts. Assignments are NEVER accepted late and will not be accepted if not turned in at the time of your lab. This applies to assignments collected in hard copy, as well as to assignments submitted to Turnitin.com.
- Notebook entries are collected in lab on the dates designated in the *Syllabus* (Part II). Notebook entries are not accepted after collection in lab by the instructor, so be sure to always bring your notebook to lab and to prepare your entries in advance.
- Post-lab Assignments are due as designated in the *Syllabus* (Part II) and will not be accepted after the designated due date. This includes assignments that must be submitted to Turnitin.com within 48 hours after your lab meets.
- Regularly refer to the *Syllabus* (Part II) to determine the due dates for all assignments.

Quizzes – Quizzes are cumulative, assessing laboratory concepts and skills from across the course. Practice problem sets are provided throughout the semester to help you prepare for quizzes. Quizzes are usually given at the beginning of lab so it is important to be on time. Part II of the *Syllabus* (Course Schedule) shows the dates for quizzes.

Quizzes include the following:

- Graphing, hypothesis writing, hypothesis evaluation, and data interpretation. You will be asked to apply your knowledge to new situations, not only the ones studied in lab.
- Problem solving related to experiments done in lab
- Terms/concepts from lab experiments
- Equipment: know how to use a piece of equipment, along with its parts and their functions
- Chemicals/chemical tests: know what the chemicals do and what the chemicals test for
- Structures: be able to identify the structures and functions on a diagram or a microscope slide
- Formulae/equations/mathematical concepts: basic statistical problems and other types of math problems associated with this course

Important Quiz Note Regarding Learning Disabilities: *If you have documentation from the Office of Disability Resources & Services, you may have to make arrangements to take quizzes before your scheduled lab. Notify your instructor and Natasha Baker (nab74@pitt.edu) at the start of the semester. If you do not notify your instructor and the director at the start of the semester, we may not be able to accommodate you.*

COURSE POLICIES

Academic Integrity –

Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, from the February 1974 Senate Committee on Tenure and Academic Freedom reported to the Senate Council, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz, assignment or exam will be imposed, with notice sent to the Dean.

View the complete policy at www.cfo.pitt.edu/policies/policy/02/02-03-02.html.

Academic dishonesty includes copying from another student, letting another student copy from you and giving or receiving information about a quiz or exam to/from a student who has not taken that quiz or exam.

Plagiarism is using someone else's ideas as your own in your assignments. When an assignment is to be done independently, that prohibits working side-by-side with someone, even if you are both writing or typing with your own hands. In fact, working in this manner violates academic integrity standards as well as the purpose of the assignment. It places you at high risk of penalty, since the line between your thoughts and ideas and those of your peers becomes indistinguishable. If you use a particular source to find an answer to a question, you need to read the source for understanding and then write in your own words, citing the source. You do not avoid plagiarism just by changing a few words or lines in someone else's work and then pretending it's yours. Plagiarism is a serious offense and can result in failure of the assignment, failure of the course, and even dismissal from the University.

Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see your instructor before the assignment is due to discuss the matter.

Turnitin –

Students agree that by taking this course all required papers may be subject to submission for textual similarity review to **Turnitin.com** for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of Turnitin.com page service is subject to the Usage Policy and Privacy Pledge posted on the Turnitin.com site.

Students Repeating Course – If you are repeating this course for any reason, you may not submit any assignment or notebook entry from a previous semester. Similarly, you may not use or turn in any contribution to a group project used in a previous semester. You must discard old materials and take a fresh approach to your work in the course. Should you submit a previously turned-in piece of work, this is self-plagiarism and violates academic integrity. You will receive zero credit.

Students with Disabilities –

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services (DRS), 140 William Pitt Union, 412-648-7890/412-624-3346 (Fax), as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

For more information, visit www.studentaffairs.pitt.edu/drsabout.

COURSE POLICIES (continued)

E-mail Communication – Each student is issued a University e-mail address (username@pitt.edu) upon admittance. This e-mail address may be used by the University for official communication with students. Students are expected to read e-mail sent to this account on a regular basis. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an e-mail forwarding service that allows students to read their e-mail via other service providers (e.g. Gmail, Yahoo).

Students that choose to forward their e-mail from their pitt.edu address to another address do so at their own risk. If e-mail is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University e-mail address.

*To forward e-mail sent to your University account, go to <http://accounts.pitt.edu>, log into your account, click on **Edit Forwarding Addresses**, and follow the instructions on the page. Be sure to log out of your account when you have finished. (For the full E-mail Communication Policy, go to www.bc.pitt.edu/policies/policy/09/09-10-01.html.)*

Audio/Video Recording - Students may not record lab lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

UNIVERSITY RESOURCES

- **Office of Disability Resources and Services (DRS)** provides support and services to assist students, with learning and physical disabilities. Such disabilities may include: visual impairment, auditory impairment, mobility impairment, and learning disabilities. 140 William Pitt Union, (412) 648-7890.
<http://www.studentaffairs.pitt.edu/drsabout>
Do not hesitate to contact the counselors at this extremely helpful office if you think that you need additional assistance. Office hours are M-F 8:30AM to 5PM.
- **Academic Resource Center (ARC)** provides programs to help students develop the skills, strategies and behaviors of confident, independent, and active learners. Find help with math, study skills and reading. Room G-1 Gardner Steel Conference Center (412) 648-7920. <http://www.asundergrad.pitt.edu/offices/arc/index.html>
- **Writing Center** provides tutorial help with all types of writing. Appointments are recommended. 317B O'Hara Street Student Center, 4024 O'Hara St. (412)624-6556.
<http://www.composition.pitt.edu/writingcenter/index.html>
- **Math Assistance Center** provides help with all math in room 215 O'Hara Street Student Center, 4024 O'Hara Street.
<http://www.mathematics.pitt.edu/about/math-assistance-center>

Foundations of Biology Lab 1, BIOSC 0050, Fall 2016
SYLLABUS, PART II - COURSE SCHEDULE

- ❖ **Assignments must be done individually by each student, except where specified. An * designates a team assignment.** Students are not to work together when completing independent assignments and individual lab notebook entries. Violations will result in scores of zero on the work in question, with notice sent to Dean.
- ❖ Any changes to this schedule will be announced in lab and posted to CourseWeb in advance.
- ❖ **(T)** = A tools and techniques lab, in which you will learn skills to support your scientific inquiry in experimental labs.
- ❖ **(E)** = An experimental lab in which you will perform your own experiment to answer a specific question.

Date	Lab Activity	Assignment(s) Due	Quiz Content	Practice Problems
Week of Aug. 29 Welcome!	Course Intro & The Nature of Science (T)	<ul style="list-style-type: none"> ▪ Log on to http://courseweb.pitt.edu : <ul style="list-style-type: none"> ✓ Print and complete the <i>Student Information Sheet</i> to be handed in to instructor. ✓ Print and Read the 2-part Syllabus: Schedule & Course Description. Bring both documents with you to lab. ▪ Purchase Lab Manual / Lab Notebook from bookstore <ul style="list-style-type: none"> ✓ Read <i>Setting the Stage for Inquiry</i> and <i>Habits of Effective Students</i> at beginning of Lab Manual ✓ Read <i>Lab Notebook Guidelines</i> at beginning of Lab Notebook. ▪ Spend 30-60 minutes exploring the online “Black Box” activity via link provided in welcome email. ▪ Bring a laptop to lab. 		
Week of Sept. 5 (Labor Day)	No meeting in lab. Complete work outside of lab.	<ul style="list-style-type: none"> ▪ Complete the <i>Academic Integrity Assignment</i>. Submit this assignment electronically to Turnitin.com. It is due by the beginning of your regularly scheduled lab time this week. See assignment on CourseWeb for guidelines. Contact your instructor or Natasha Baker (nab74@pitt.edu) if you missed the first lab. 		
Week of Sept. 12	What is Life? (Part I) (T)	<ul style="list-style-type: none"> ▪ Read Lab #1, including <i>Reading Assignment</i> ▪ Complete the Pre-lab Assignment. (See CourseWeb). ▪ Watch Microscopy video. (Find link on CourseWeb.) 		What is Life? (Part I)

Date	Lab Activity	Assignment(s) Due	Quiz Content	Practice Problems
Week of Sept. 19	What is Life? (Part II) (T & E)	<ul style="list-style-type: none"> ▪ Read Lab #2, including <i>Reading Assignment</i>. ▪ Complete the Pre-lab Assignment. (See CourseWeb.) 		What is Life? (Part II)
Week of Sept. 26	What is Life? (Part III) (T)	<ul style="list-style-type: none"> ▪ Read Lab #3, including <i>Reading Assignment</i> ▪ Complete the Pre-lab Assignment. (See CourseWeb.) (You will turn in your WIL-2 Exercise 2 Results & Discussion Notebook Entry at the beginning of lab.) 		What is Life? (Part III)
Week of Oct. 3	Dead or Alive? (Part I) (T)	<ul style="list-style-type: none"> ▪ Read all of Lab #4. ▪ Complete the Pre-lab Assignment for <i>Dead or Alive</i> Week 1. (See CourseWeb.) ▪ Bring Laptop and USB drive to lab. 	Quiz #1 – What is Life? (Parts I,II,III)	
Week of Oct. 10	Dead or Alive? (Part II) (E)	<ul style="list-style-type: none"> ▪ Complete the Pre-lab Assignment for <i>Dead or Alive</i> Week 2. (See CourseWeb.) ▪ Review what you and your team plan to do this week in lab. 		
Week of Oct. 17 (Fall Break)	No meeting in lab this week.	<ul style="list-style-type: none"> ▪ Work on first draft of specific section of Project Proposal as decided within team (See CourseWeb). 		

Date	Lab Activity	Assignment(s) Due	Quiz Content	Practice Problems
Week of Oct. 24	Dead or Alive? (Part III) (E) & Midterm Evaluations	<ul style="list-style-type: none"> ▪ First Draft of specific section of Project Proposal as decided within team (See CourseWeb). ▪ Review <i>Dead or Alive</i>- Week 3 (Sections III and IV). ▪ Quiz Reflection (recommended) ▪ Bring Laptop and USB drive to lab. <p>(Teams present findings & you will turn in DOA2 Notebook Entry at the beginning of today's lab.)</p>		Dead or Alive?
Week of Oct. 31	Enzymes (Part I) (Activity 1) (T)	<ul style="list-style-type: none"> ▪ Read Lab #5. ▪ Watch Micropipette Video Tutorial. (See CourseWeb.) ▪ Meet with <i>Dead or Alive?</i> Teammates to finalize Grant Proposal 	Quiz #2 – Dead or Alive? (Parts I,II,III) [+ QZ 1 skills and content]	
Week of Nov. 7	Enzymes (Part I) (Activities 2-3) (T)	<ul style="list-style-type: none"> ▪ Final Draft of Dead or Alive NSF Proposal *(group project) ▪ Print and bring document <i>Making Tables and Figures Using Excel</i> ▪ Bring Laptop to lab. <p>(You will turn in your Enzymes (Part I) Activity 1 Notebook Results (including Standard Curve) & Discussion at the beginning of lab.)</p>		Enzymes (Parts I & II)
Week of Nov. 14	Enzymes (Part II) (E)	<ul style="list-style-type: none"> ▪ Read Lab #6. ▪ Pre-Lab Assignment for <i>Enzymes</i> (Part II) (CourseWeb) ▪ Quiz Reflection (recommended) <p><i>Enzymes</i> (Part II) Post-Lab Assignment Part A (Individual Results Analysis) must be submitted to Turnitin within 48 hours of the END of lab. (CourseWeb)</p>		
Week of Nov. 21 (Thanksgiving)	No meeting in lab this week.	<ul style="list-style-type: none"> ▪ Work with your team on <i>Enzymes</i> (Part II) Post-Lab Assignment Part B (PowerPoint Presentation*) 		

Date	Lab Activity	Assignment(s) Due	Quiz Content	Practice Problems
Week of Nov. 28	Enzymes Presentations, Course Surveys & Intro to Photosynthesis (T)	<ul style="list-style-type: none"> ▪ <i>Enzymes</i> (Part II) - *group project (PowerPoint Presentation) (See CourseWeb) 		Photosynthesis
Week of Dec. 5	Photosynthesis Experiment (E)	<p>You will create a Notebook Entry for today's experiment and turn it in at the end of lab with the data you collect in today's lab.</p>	Quiz #3 – Enzymes, Photosynthesis [+ all previous skills and content]	

Keep track of your grade so you know if you need to seek help from your instructor.

Assessments:	Possible Points	Points Earned
Pre-lab Assignments (7) – 70 points		
Academic Integrity Practice	10	
What is Life? Part I (Notebook Set-Up)	10	
What is Life? Part II	10	
What is Life? Part III	10	
Dead or Alive? Part I	10	
Dead or Alive? Part II	10	
Enzymes Part II	10	
Quizzes (3) - 120 points		
What is Life? Parts I/II/III	30	
Dead or Alive? Parts I/II/III	40	
Enzymes Parts I/II & Photosynthesis	50	
Lab Notebook (4) – 35 points		
What is Life? (II, Exercise 2) (Results & Discussion only)	7	
Dead or Alive? Part II	15	
Enzymes (I, Activity 1) (Results & Discussion only)	3	
Photosynthesis	10	
Post-lab Assignments (3) - 60 points		
Dead or Alive? Part III – Team Grant Proposal	30	
Enzymes Part II – Individual Results Analysis	10	
Enzymes Part II – Team PowerPoint Presentation	20	
TOTAL	285	