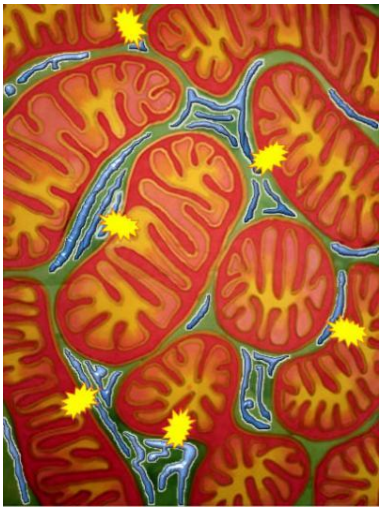
BIO 115
General Biology I Laboratory (Section 1)
Fall 2015; Monday 1pm-4pm
209 Cox Science & Language



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WWU Mission: An independent voice in higher education, William Woods University distinguishes itself as a student-centered and professions-oriented university committed to the values of ethics, self-liberation, and lifelong education of students in the world community.

Text: *BIOLOGY 115 LAB MANUAL WILLIAM WOODS UNIV, 1/e*; Pearson (2014) ISBN10: 1269678205

You must have an **unused, current lab manual**; lab books previously written in are not acceptable. You must bring it to class every meeting.

Course Description: The purpose of this lab is to offer a hands-on investigative experience with some of the content addressed in BIO 114. Topics include measurement and microscopy, structure and function of the cell, the fundamental chemistry of life, photosynthesis, cellular respiration, Mendelian genetics, and an introduction to molecular biology. Experimental design, use of scientific equipment, and critical thinking are emphasized, culminating in the execution and analysis of a student-designed experiment during the second half of the course.
2015-2016 Academic Catalog: http://www.williamwoods.edu/catalogs/1516/undergraduate/index.aspx

Course Prerequisites: Concurrent enrollment in BIO 114.

Technology Use Expectations: Messages via WWU email are official communication; students are responsible for regularly checking their WWU email accounts. Course documents, and grades will be available on the relevant Owlnet page(s). This course, combined with BIO 114, fulfills 4-credits of Natural Science in the General Education curriculum; as such, students are required to submit designated coursework through TK20. Technology issues should be directed to UIT, (ext. 4224; helpdesk@williamwoods.edu).

Biology Program Objectives: This lab course covers the following Biology Program Objectives:

1. Demonstrate knowledge of cell ultra structure and basic cellular processes and develop an understanding of the requisites of life.
2. Converse with the basic tenets of transmission, molecular, developmental and population genetics.
4. Demonstrate knowledge of the diversity and taxonomy of organisms and the significance of variation in morphology, behavior and life history.
5. Explain the role that natural selection, genetic drift and other phenomena have had on the production of biological diversity and the role evolution has in integrating explanations of both the unity and diversity of life.
6. Demonstrate knowledge of scientific methodologies and usage of current scientific equipment and technologies.

This lab does not cover the following Biology Program Objective:

3. Contributes to an overview of the major organ systems of the human body and the normal and pathological functioning of those organ systems.

Assessment Procedures and Course Assignment Details: Grades are earned through the completion of scheduled lab practical exams, a final practical exam, weekly lab results/summaries, participation in laboratory exercises, and the independent design, execution, and presentation of results of an experiment. Separate passing grades in lecture and lab are required. The laboratory grade will be weighted to account for 1/4 of the total BIO 114/115 grade.

Practical Exams: Two lab practicals will be given consisting of identification, problem solving, short, and long essays relevant to preceding lab activities. *Make-up exams are offered only in consideration of extraordinary circumstances. In the case of absence from an exam because of a University-sponsored activity, the student should arrange a time to take the exam upon return to the University.*

Final Exam: A final exam will be given finals week during normal lab time that is similar in structure to other lab practicals, but instead covers the entire semester.

Self-Designed Experiment: Students will form groups and propose an experiment to perform within the time and reagent constraints of BIO115. These points are earned in design, execution and the presentation of results at the end of the semester in oral and written form.

Lab Results/Summaries: Due at the beginning of each laboratory meeting are assigned analyses of data and/or summaries.

General Education Objectives: BIO114/115 fulfills 4-credits under the Natural Science General Education Objective: *Students will understand the natural world through systematic observation by analyzing data and by forming, testing, and revising hypotheses.* Four separate criteria are assessed for this objective. The first and fourth criteria are addressed through a reflective essay in response to a prompt from popular media concerning recent scientific activity. The second and third criteria are addressed through a summative report on the independent experiment(s) designed and executed as part of BIO 115. Both of these assignments are distributed in BIO 114; refer to that syllabus for the General Education rubric.

Tutoring Information for all Students:

- **Writing Center**: Kemper 216
  Contact Dr. Greg Smith for questions: greg.smith@williamwoods.edu

- **Math Center:** Science and Language 313
  Contact Professor Raymond Hune for questions: raymond.hune@williamwoods.edu

- **SmartThinking**
  Online assistance for English, Math, and most other academic subjects is also available 24/7 through Smarthinking, our e-tutoring service provider. Just click on the "Tutoring" tab at the top of your OWLNet main page and follow the simple directions to connect with a dedicated personal tutor!

  No separate login is required. You will see a list of basic subjects, and a field to do a subject search. For most subjects there are two options, "Drop-in tutoring" and "Offline questions." Drop-in allows you to chat live with a tutor, and offline allows you to submit a question and they email you back the answers.

  Please contact the Academic Advising Office at bonnie.carr@williamwoods.edu if you need additional assistance.

- **Atomic learning**
  All students at WWU have access to this online tutorial program. Atomic Learning is a digital tutorial website with more than 1,500 hours of online professional development and learning resources. This program will assist you in learning how to use different software programs.

  Atomic Learning is accessed through Owlnet. Once logged into Owlnet, the Atomic Learning link is on the far right in the grey section under courses. The log in is your email user name and password. If you have any questions or concerns you can contact the UIT helpdesk at helpdesk@williamwoods.edu.

Grading Scale:

- 500 points are distributed among the course assignments by the following scheme:

Activity	*Total Value*
Practical Exams (2)	150
Final Exam	100
Self-designed Experiment & Presentation	100
Lab Results/Summaries	100
Total Available for Semester	**450**

- Final letter grades are based on the percentage of points achieved: for BIO 115 ≥60% is reported as "CR" (credit), anything less than 60% is reported as failure.
- Percentages from lecture (BIO 114) and lab will be combined into one final grade.
- BIO 114 is weighted as ¾ of the final grade and BIO 115 as ¼.
- Passing scores must be received in both BIO 114 and BIO 115 to pass the course.

Attendance Policy: Lab attendance is **required**. Arrive on time with required materials (lab manual, pencil). Two unexcused absences from lab will reduce the final BIO114/115 grade by one letter; *three unexcused absences will result in failure for the combined BIO 114/115 grade*.

Class Conduct and Participation Expectations: Students are expected to work hard, ask questions, and discuss relevant information. The point of a lab is to be hands-on and active. It is expected that you read the lab protocols ahead of time. Part of the lab learning experience is figuring out how to troubleshoot problems independently; experimental failures aren't all bad, as long as you work to figure out what went wrong. Lab is scheduled for 3h, and you should expect to be there for that amount of time. Rushed/sloppy work is unacceptable. You must repeat experiments, both failures and successes, to achieve the appropriate number of replicates. This is science, not cooking school. Equitable and respectful participation in lab groups is expected. *The instructors reserve discretion for penalizing final grades of students who do not follow these principles*, for example, students who chronically try to rush out well before what could be reasonably considered the time required for best attempts at lab activities. Furthermore, there is always something to do if you find yourself with some extra time like cleaning up any reagents or dishes you used (which you should be doing anyway!).

Policy on Late Work: All assignments are due at the beginning of class and are considered late once the class starts. A 20% point penalty for each day late will be incurred (including weekends).

ADA Guidelines:
Students who choose to disclose a disability are responsible for notifying the University of their disability on a timely basis. Questions about disability services should be directed to the University's coordinator for disability services. Contact information is (573) 592-1194 or ada@williamwoods.edu. The office is on the first floor of the Academic Building.

Academic Integrity Policy

- William Woods University, founded on the principle of honesty, has long endeavored to maintain an atmosphere of academic integrity. In all academic work, it is important that the ideas and contributions of others be appropriately acknowledged, and that work that is presented as original is, in fact, original. Insuring the honesty and fairness of the intellectual environment at William Woods University is a responsibility that is shared by the entire campus community. Details of the Academic Integrity Policy can be found at the following web address: https://www.williamwoods.edu/catalogs/1516/undergraduate/policy_detail.aspx?Policies_id=51

Student Outcomes Assessment Policy: 2015-2016 Academic Catalog
https://www.williamwoods.edu/catalogs/1516/undergraduate/policy_detail.aspx?Policies_id=30

Additional Academic Policies can be found at: 2015-2016 Academic Catalog:
https://www.williamwoods.edu/catalogs/1516/undergraduate/policies.aspx

Academic Credit Hour Definition: The University has adopted the following United States Department of Education definition of a credit hour:

A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:

(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time.

Expected Outside Time Commitment: Following the US DOE definition, students should expect to spend a minimum of 90h outside time for the BIO 114 component, since it is similar to a 3-credit course, and 30h for BIO 115 (*i.e.* 1-credit) for a total combined *minimum* of 120h outside time. Estimated time is given by activity in the table below with an actual sum estimate of 123h outside time for BIO 114 and BIO 115.

Summary of Expected Out-of-Class Time*

Activity	*Category Total Time (hours)*
Exam Studying (10h x 4)	40
Homework (1h x 7 assigned)	7
Readings (2h x 18 chapters)	36
G.E. Writing (5h x 2 assigned)	10
Lab Time (2h x 15 labs)†	30
Semester Total	**123**

** Accounts for BIO114/115 combined four credits, a minimum of 120h outside time*
†Laboratories (BIO115) are scheduled as weekly three hour blocks with two of the hours counted toward outside time

Add/Drop Deadlines and Other Important Dates:

- Last day to add a class – August 28, 4:30 PM.
- Last day to drop a class during refund period – September 21, 4:30 PM
- Last day to drop a class or withdraw from the University – October 30, 4:30 PM
- End of Midterm – October 16
- Midterm grades reported – October 20
- Daylight Saving Time ends – November 1
- Finals Week – December 7 -11

Tentative Laboratory Schedule

DATE	TOPIC
24/25 Aug	Intro, Safety, Experimental Design and Scientific Method
31 Aug/1 Sep	Microscopy & Cells
7/8 Sep	**NO LAB** – Labor Day
14/15 Sep	Macromolecules
21/22 Sep	Diffusion and Osmosis; Cellular membranes
28/29 Sep	**Lab practical exam;** Planning self-designed experiment
5/6 Oct	**Turn in proposal for experiment**. Enzymes
12/13 Oct	Mitosis & Meiosis
19/20 Oct	Photosynthesis
26/27 Oct	**Lab practical exam**
2/3 Nov	Mendelian Genetics
9/10 Nov	**Self-designed experiments**
16/17 Nov	Molecular biology and biotechnology
23/24 Nov	**Turn in full lab report**. Finish molecular biology and biotechnology
30 Nov/1 Dec	**Student Presentations**
7/8 Dec	**Final Lab practical exam** (normal lab day & time)

LAB FAQs!

1. Why is attendance required?
    a. Because the class only meets once/week and your participation in experiments is necessary for learning concepts and practical applications in biology.
2. What happens if I know I have to miss a lab (*e.g.* for a University event)?
    a. For excused absences, best effort should be made to do a make-up lab after your absence, preferably the same week. Generally, you are not allowed to make up for an unexcused absence.
3. Are there dissections in this lab? Do you offer non-dissection alternatives?
    a. Generally, no. This lab is intro. cell *&* molecular biology. However, it takes place in a lab with many preserved specimens.
4. I missed my lab time; can I show up to one of the other sections?
    a. No, usually. However, if you were participating in a University-sponsored event (excused absence), the best option for making up what you missed might be another lab time ***that same week*** if there is room.
5. Is there really lab Thanksgiving week? Can I miss it?
    a. Yes, lab sessions are held that week (classes are in session Monday & Tuesday). It is not an excused absence to miss it for any other reason than a University-sponsored event. Plan ahead with your travels.
6. Can I come in outside of scheduled lab time to re-examine material we covered?
    a. Definitely! As long as there isn't another class in there, and one of the faculty is here, you can come in for some extra, independent lab time. For example, you might want some extra time to observe microscopic specimens by yourself or with a study group. Independent studying in the lab is encouraged.