



Course Syllabus

Course #: BIO 2015

ARTS and SCIENCES

Class Days: T, W, or R

Class Time: 10 am-12:50 pm

Location: Laboratory:E 208

Credit Hours: 1 Contact Hours: 3 Lab Hours: 3 Lecture Hours: 0

Instructor: Ruth Willey

Office Location:

Phone:

Email

Office Hours:

Division Office/Location: A 202

Division Fax:

Full-time Contact Person: C. Chudzinski

Phone(s):

Course Description:

A series of experiments designed to enhance the material discussed in BIO 101. A general introduction to cell structure and function, energy transfer processes in plants and animals, basic molecular and human genetics.

Prerequisite(s): High school biology and chemistry are required or permission of Cathy Chudzinski

Co-requisite(s): BIO 2010

Entry Level Skills and Knowledge: Compass scores into both MTH 1310 and ENG 1050

Required Texts, Supplies and Equipment:

Biology Laboratory Manual, 9th edition, Sylvia Mader 2006

Dissecting Kit (available in bookstore - ask at the check-out)

ISBN: 0-07-298955-6

Grading:

90 - 100% of total points	=	A
80 - 89%	=	B
70 - 79%	=	C
60 - 69%	=	D
59 or less	=	F

The lowest one lab is dropped from the final grade. A minimum of 13 of the assigned 15 labs must be completed to fulfill the course requirement.

Learning Outcomes:

General Education

Students will be able to write a technically corrected and scientifically sound lab report. The writing process will be developed over the course of the quarter ending with reports which include: Introduction, Procedure, Results and Discussion (including Alternative Interpretations, Identification of Assumptions, and Countering Possible Criticism).

Students should be able to properly use compound light binocular microscopes and binocular dissecting microscopes.

Students should be able to cite tests used to identify presence of macromolecules, distinguish positive and negative test response, and describe the variable response of the Benedict's test.

Students should be able to identify and state functions of animal and plant cells, describe diffusion as exemplified by experimental procedure, predict the effects of isotonic, hypertonic and hypotonic solutions on red blood cells, and predict pH before and after addition of acids to buffered and non-buffered solutions.

Students should be able to discuss the function of an enzyme, describe enzymatic reactions studied during lab, and predict the effects of temperature, time, concentration and pH on enzyme reactions.

Students should be able to perform separation of plant pigments by paper chromatography, demonstrate that carbon dioxide is utilized during photosynthesis, and describe the relationship between aerobic cellular respiration and photosynthesis.

Students should be able to give the overall equations for fermentation and aerobic cellular respiration, relate utilization of oxygen to each process, to ATP production, state and explain the effects of food source on fermentation by yeast, explain aerobic respiration experiment performed in the lab, state and explain the effects of germination and non-germination of soybeans on the results of the aerobic respiration lab.

Students should be able to name and describe the stages of mitosis and meiosis, contrast plant and animal cells, compare outcome of meiosis and mitosis by the use of a microscope.

Students should be able to state Mendel's Laws of Segregation and Independent Assortment and relate these to the lab, give phenotype and genotype for all organisms studied, use Chi-square statistical test to help determine whether data do or do not support a hypothesis.

Students should be able to determine genotype from lab experiments, do genetics calculations involving autosomal dominant, recessive, and X-linked recessive genes, predict possible karyotypes using a pedigree chart and prepare a karyotype when provided with diagrams of all chromosomes needed.

Students should be able to explain the structure and replication of DNA and RNA, state the function of translation and transcription, isolate DNA, and understand the relationship between abnormal DNA base sequence and a generic disorder and understand the process of gel electrophoresis.

Students should be able to use fossils to trace the history of life, understand the significance of comparative anatomy, and biochemical evidence for evolution.

Assessment of Student Learning:

This course may include a project that is one of several that will be used by faculty to assess student academic performance in the program. A panel of faculty will review all (projects or whatever assessment activity you are doing), then assess and summarize the academic performance of students at this point in the program. The results of this assessment will be shared among the department faculty, used to identify needed changes or improvements, and submitted to the Student Academic Assessment Committee as part of the college's overall student academic assessment effort.

Assessment Project and Measurement in course (if any):

Plan of Work:

WEEK 1	Lab 1 - Scientific Method; Handout & Scientific Method video Course overview, Laboratory safety, explanation of lab format
WEEK 2	LAB 2 - Metric measurement and microscopy; pg. 9, also see Appendix B, p. 517
WEEK 3	LAB 3 - Chemical composition of cells ; pg. 29
WEEK 4	LAB 4 - Cell structure and function; pg. 43
WEEK 5	LAB 5 – Enzymes; pg.59
WEEK 6	LAB 6 Photosynthesis, p. 69-73 (omit p. 74-76 and 77-78) LAB 7 - Cellular Respiration, p. 79-81. (omit p. 82-83, aerobic respiration)
WEEK 7	LAB 8 - Mitosis and Meiosis, set up Mendelian genetics lab
WEEK 8	LAB 9 - Mendelian Genetics
WEEK 9	Final counts for lab 9 and isolation of DNA from strawberries
WEEK 10	DNA Biology
WEEK 11	Gel electrophoresis
WEEK 12	Thanksgiving Break
WEEK 13	Evidences of Evolution
WEEK 14	Mechanisms of Evolution
WEEK 15	Genetic Drift and Natural Selection

Course Requirements:**Policies**

Lab grades will be based upon qualitative and quantitative data, as well as write-up. Lab technique and clean up are also considered part of the lab.

Late labs are subject to a 10%/day grade deduction. No lab reports will be accepted once the class's graded work has been returned.

Each student is expected to complete all phases of every lab and write his/her own lab reports.

No make-up laboratory time is normally scheduled, therefore students are expected to perform all work during scheduled sessions. However, if space is available and you have permission of the instructor, you may attend another lab section to perform a particular lab. Make sure all parts of the lab are answered correctly and completely.

Course Withdrawing: If for any reason you need to withdraw from this course, be certain that you do so according to College procedure. It is your responsibility to know and follow this procedure. If you simply stop coming to class, without officially withdrawing from the course, your grade is an automatic "F." Please follow official College procedure for withdrawing from this or any course.

College Academic Policies are located in the College Catalog. A copy of the current catalog may be picked up in any of the division offices or admissions. The list of college policies is also available online at <https://www.terra.edu/register/Collegecat/policies.asp>.

Support Services: The College offers a number of support services to assist in your success in this course and all courses. Among these services are the Writing & Math Center in B105, the Office of Learning Support Services, which coordinates the campus disability services and tutoring programs, the computer labs, and the computers in the atriums.

Any student who feels he/she may need an accommodation based on the documentation of a disability should the Office of Learning Support Services privately to discuss his/her specific issues. Please contact the OLSS at (419) 334-8400 X 208 or visit 100 Roy Klay Hall (Building A) to coordinate reasonable accommodations.

If you have a documented disability and are receiving academic accommodations through the Office of Learning Support Services, please schedule a meeting with me in a timely manner so that we may discuss how these services will be arranged.

Tutoring services are available to students beginning the second week of every quarter. Students requesting tutoring services should obtain a tutor request form from the OLSS in 100 Roy Klay Hall (Building A) or online at the Terra website. Please note that instructor verification and acceptance of

the Student Learner Agreement is necessary for all tutoring requests. All requests should be submitted to 100 Roy Klay Hall (Building A).

General/Miscellaneous:

This syllabus is for student and instructional planning. It will be followed as closely as possible, but will only serve as a guideline. Any student having a need for special accommodations is encouraged to make their needs known to the instructor during the first class of the quarter. **Cheating or plagiarism may be cause for an individual to be dismissed from the class and/or the institution.** See the Student Handbook for additional information regarding college policy.