



Major Concepts of Biology
The University of Toledo
College of Natural Science and Mathematics
BIOL2010-010 CRN17270

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|-------------------------|--|-------------------------|-----------------|
| Instructor: | Dr. Sally E. Harmych | Term: | Spring 2017 |
| Email: | sally.harmych@utoledo.edu | Class Location: | ST 0131 |
| Office Hours: | T/W/R 9-10 AM T/R 12:30 – 2 PM | Class Day/ Time: | TR 11am–12:15pm |
| Office Location: | WO1235K | | |
| Office Phone: | 419.530.4585 | Credit Hours: | 3 |

COURSE/CATALOG DESCRIPTION

This course will discuss topics related to the major concepts of biology such as evolution, the cell, the gene and homeostasis. This course is designed for students majoring in science, engineering or other fields that require biology as a prerequisite who have not had sufficient preparation to begin Fundamentals of Life Science I or II (BIOL 2150 or BIOL 2170).

STUDENT LEARNING OUTCOMES

Students who successfully complete this course will be able to:

- Generate a hypothesis from a set of observations and then design experiments to test the hypothesis.
- Describe the structure and function of prokaryotic and eukaryotic animal and plant cells.
- Describe the processes of cell communication.
- Outline the structure of proteins, nucleic acids, lipids and carbohydrates.
- Explain the flow of genetic information in the cell from DNA to RNA to proteins.
- Explain patterns of inheritance and describe the processes of mitosis and meiosis.
- Describe how natural selection has resulted in the diversity of life on earth.
- Explain the processes by which animals maintain homeostasis by monitoring the internal and external environments.

**Students are expected to gain a foundational level of understanding that will allow the students to be prepared for success in the major's biology Fundamentals of Life Science series.

TEACHING STRATEGIES

I expect that since you are taking this course you are interested in learning about the subject of biology. The best way to be successful is to read the text, attend lecture, take notes and do your online assignments. It is helpful if you read the text before attending lecture. When you come to lecture it is expected that your focus will be on the material covered, not your cell phone, latest email or Facebook postings, or today's news headlines. During lecture I will outline the subject matter and cover key points. In addition, attending lecture gives you an opportunity to ask questions about the material and helps me know when you are having difficulties. What is covered in lecture is much more likely to be seen on exams. I encourage you to ask questions if you are having difficulty. You can also ask me questions directly after class, during office hours, via email or over the phone. I am here to help you be successful, but I cannot do that if you do not ask.

PREREQUISITES AND COREQUISITES

None

REQUIRED TEXTS AND ANCILLARY MATERIALS

Principles of Biology with Sapling Access from Nature Education, MacMillian (<http://nature.com/principles>)

- Access Card 9781942310761

Turning Technology's Response Card RF

- Clicker with 4 year access 9781934931783
- or 4 year access 9781934931738

PackBack Questions subscription: Purchase for \$18 at <https://www.packback.co/questions>



TECHNOLOGY REQUIREMENT

Turning Technology's Response Card RF either 9781934931691 or 9781934931684
Powerpoint
Principles of Biology Access
PackBack Answers Access
Blackboard Access

UNIVERSITY POLICIES

The University is an equal opportunity educational institution. Please read The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance

(http://www.utoledo.edu/policies/administration/diversity/pdfs/3364_50_03_Nondiscrimination_o.pdf)

ACADEMIC ACCOMMODATIONS

The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/ adjustments in this course please contact the Student Disability Services Office at (419)530-4981 or through the UT website at <http://www.utoledo.edu/offices/student-disability-services/index.html>

CLASSROOM EXPECTATIONS

Please bring a **#2 pencil, an eraser and your valid UT student ID card** to each examination. Students who forget their ID will not be able to see their grade on the examination until their ID is shown to the professor.

Examinations start and end at specified times. Under no circumstances will students be admitted to an exam after the first student has left the exam. Extra time will not be given for students that show up late. If you must miss an exam you must contact me within 24 hours to schedule the make-up exam. When we meet you must have a written excuse. If proper documentation is not provided then the missed exam will be scored as your lowest exam score for the semester. If you know in advance that you must miss an exam for a legitimate reason then please see me to schedule an early exam.

Please see me by the end of the first week of classes if you have special needs concerning testing. You may take the exams in the Student Testing center (FH1080).

GRADING

Students will be assessed based on their performance on midterm exams, a final exam and in-class and online work as outlined below.

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| Midterm exams | 40% |
| Final exam | 20% |
| In-class work and assignments | 20% |
| Online Discussions | 5% |
| Online homework | 15% |

Midterm exams: Students will be given 4 midterm exams worth 100 points each. The exams will be worth 40% of the final grade. The lowest midterm score will be dropped at the end of the semester.

Final Exam: The final exam will be comprehensive and will count for 20% of the grade. This exam will consist of 75 multiple choice questions worth 2 points each and will be worth 150 points.



In-class work and assignments: This portion of the grade will include in-class group assignments as well as clicker points. Students will be divided into class groups by the instructor at the beginning of the semester. These groups will be asked to work together on in-class assignments and discussions over the material. Assignments will include both group assignments that all members of the team will contribute to as well as individual assignments. Each team member is expected to take an active part in the work that is assigned. These assignments and clicker points will be worth 20% of the final grade.

*****DEADLINE TO REGISTER CLICKERS IS MONDAY, JANUARY 16 AT NOON*****

Online Discussions: We will be using an online discussion tool called **Packback Questions** for class discussions this semester. You will receive participation points for these online discussions. To earn participation points you are required to post at least 2 responses per discussion topic and one answer. New discussion topics will be posted every 2 weeks. They will open on Sunday at midnight and end two weeks from the start date at midnight. These discussions will be used to expand your understanding of each topic and to show you the everyday application of the topics. These discussions will count for 5% of your final grade.

Online Homework: Students will be assigned material to read before each class meeting. This information can be found in the Topic Schedule below. It is the student's responsibility to look ahead on the schedule and see which chapter we will be covering in the next class so they can read the material. In addition to reading, students will be assigned a short online assignment to complete before each class over the material that will be covered that day. These assignments will be worth 5 points each and need to be completed before walking into lecture for that day. Students will also be assigned Post Lecture Assignments on Sapling Learning for each chapter. The online homework will be worth 15% of the final grade.

Final Grade Calculation: Your final grade will be calculated from a combination of In-class work and assignments (20%), online discussions (5%), your online homework (15%), the **best three (3)** of four (4) midterm exams (40%) and the final comprehensive exam (20%)

*****Academic dishonesty may lead to failure of this course. Read the University policy about this subject*****

Grading Scale: Exams will be scored as % correct points, which will correspond to a letter grade according to the table below. This scale is based on the assumption that knowledge of more than 50% of the material is needed to pass this course.

| <u>GRADE</u> | <u>% CORRECT</u> | <u>GRADE</u> | <u>%CORRECT</u> |
|--------------|------------------|--------------|-----------------|
| A | 90 – 100 | C | 67 - 70 |
| A- | 87 – 89 | C- | 63 - 66 |
| B+ | 83 – 86 | D+ | 59 - 62 |
| B | 79 – 82 | D | 55 - 58 |
| B- | 75 – 78 | D- | 51 – 54 |
| C+ | 71 – 74 | F | 0 - 50 |

*****Any student listed in the course after March 24th can only receive a grade of A – F. Any student who stops attending class after taking the first exam will receive a grade of F for all the missed exams, *unless that student withdraws from the course by March 24th*. I will only assign **IN** grades in extraordinary cases when unexpected conditions prevent a student from completing the course within the term of enrollment. An IN grade must be removed by the end of the following semester.**



COURSE SCHEDULE

| Week | Date | Topic | Module | PreLecture Assignment | Post Lecture Assignment |
|------|-------------|---|--------|---|---|
| 1 | January 10 | Intro to Course and Overview | | | |
| | January 12 | What is Science and How do Scientists study it? | 3 | Pre-Lecture quiz due before class Jan. 12 | Sapling HW 3: Due Jan. 15 at midnight |
| 2 | January 17 | Atoms, Elements and Matter | 4 | Pre-Lecture quiz due before class Jan. 17 | Sapling HW 4: Due Jan. 20 at midnight |
| | January 19 | Structure of Molecules and Compounds | 5 | Pre-Lecture quiz due before class Jan. 19 | Sapling HW 5: Due Jan. 22 at midnight |
| 3 | January 24 | Carbohydrates and Lipids | 8, 9 | Pre-Lecture quiz due before class Jan. 24 | Sapling HW 8&9: Due Jan. 27 at midnight |
| | January 26 | Proteins and Nucleic Acids | 10, 12 | Pre-Lecture quiz due before class Jan. 26 | Sapling HW 10&12: Due Jan. 29 at midnight |
| 4 | January 31 | Exam 1 (Modules 3, 4, 5, 8, 9, 10, 12) | | | |
| | February 2 | Review of Exam 1 | | | |
| 5 | February 7 | Cells and Eukaryotic Cells | 13, 14 | Pre-Lecture quiz due before class Feb. 7 | Sapling HW13&14: Due Feb. 10 at midnight |
| | February 9 | Cell Membranes | 17 | Pre-Lecture quiz due before class Feb. 9 | Sapling HW 17: Due Feb. 12 at midnight |
| 6 | February 14 | Cell Division (mitosis) | 32 | Pre-Lecture quiz due before class Feb. 14 | Sapling HW 32: Due Feb. 17 at midnight |

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| | February 16 | Cell Division & Cell Cycle Control | 33 | Pre-Lecture quiz due before class Feb. 16 | Sapling HW 33: Due Feb. 19 at midnight |
| 7 | February 21 | Meiosis & Sexual Reproduction | 36 | Pre-Lecture quiz due before class Feb. 21 | Sapling HW 36: Due Feb. 20 at midnight |
| | February 22 | Exam 2 (Modules 13, 14, 17, 32, 33, 36) | | | |
| 8 | February 28 | Mendel's Principles and Inheritance | 37 | Pre-Lecture quiz due before class Feb. 28 | Sapling HW 37: Due March 3 at midnight |
| | March 2 | Non-Mendelian Inheritance | 39 | Pre-Lecture quiz due before class March 2 | Sapling HW 39: Due March 5 at midnight |
| 9 | March 7 | No Classes - Spring Break | | | |
| | March 9 | No Classes - Spring Break | | | |
| 10 | March 14 | DNA Replication | 45 | Pre-Lecture quiz due before class March 14 | Sapling HW 45: Due March 17 at midnight |
| | March 16 | Gene Expression: Transcription | 49 | Pre-Lecture quiz due before class March 16 | Sapling HW 49: Due March 19 at midnight |
| 11 | March 21 | Gene Expression: Translation | 50 | Pre-Lecture quiz due before class March 16 | Sapling HW 50: Due March 22 at midnight |
| | March 23 | Exam 3 (Modules 37, 39, 45, 49, 50) | | | |
| 12 | March 28 | Animal Structure and Function | 123 | Pre-Lecture quiz due before class March 28 | Sapling HW 123: Due March 31 at midnight |
| | March 30 | Homeostasis and Thermoregulation | 124, 125 | Pre-Lecture quiz due before class March 30 | Sapling HW 124 & 125: Due Jan. 22 at midnight |
| 13 | April 4 | Nervous systems | 126 | Pre-Lecture quiz due before class April 4 | Sapling HW 126: Due April 7 at midnight |

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| | April 6 | Nervous systems and Action potentials | 127 | Pre-Lecture quiz due before class April 6 | Sapling HW127: Due April 9 at midnight |
| 14 | April 11 | Nervous systems and Action potentials | 127 | | |
| | April 13 | Exam 4 (Modules 123, 124, 125, 126, 127) | | | |
| 15 | April 18 | Hormones as signaling molecules | 137 | Pre-Lecture quiz due before class April 18 | Sapling HW 137: Due April 21 at midnight |
| | April 20 | Hormones and the body | 138 | Pre-Lecture quiz due before class April 20 | Sapling HW 138: Due April 23 at midnight |
| 16 | April 25 | Osmoregulation and the Nephron | 154 | | |
| | April 27 | Osmoregulation and the Nephron | 156 | | |
| | May 4 | Final Review Day | | | |
| | | Final Exam 10:15 AM - 12:15 AM (Thursday) | | | |

Policy Statement on Academic Dishonesty

Academic dishonesty will not be tolerated. Among the aims of education are the acquisition of knowledge and development of the skills necessary for success in any profession. Activities inconsistent with these aims will not be permitted. Students are responsible for knowing what constitutes academic dishonesty. If students are uncertain about what constitutes plagiarism or cheating they should seek the instructor's advice. Examples of academic dishonesty include, but are not limited to:

- Plagiarizing or representing the words, ideas or information of another person as one's own and not offering proper documentation;
- Giving or receiving, prior to an examination, any unauthorized information concerning the content of that examination;
- Referring to or displaying any unauthorized materials inside or outside of the examination room during the course of an examination;
- Communicating during an examination in any manner with any unauthorized person concerning the examination or any part of it;
- Giving or receiving substantive aid during the course of an examination;
- Commencing an examination before the stipulated time or continuing to work on an examination after the announced conclusion of the examination period;
- Taking, converting, concealing, defacing, damaging or destroying any property related to the preparation or completion of assignments, research or examination;
- Submitting the same written work to fulfill the requirements for more than one course.

While academic integrity is particularly the responsibility of the student, the faculty members also have a responsibility. Assignments and tests should be constructed and proctored so as to discourage academic dishonesty. Faculty members are expected to inform their students explicitly as to what materials and procedures are authorized for use in the preparation of assignments or in examinations (e.g., the use of calculator, computer, text materials, etc.). Should cases of academic dishonesty be found among students, the instructor may choose to counsel the student, or the following sanctions may be imposed:



- The student may be assigned an F for the work in question.
- The student may be assigned an F for the course. In this case the instructor should inform the Dean and the student of this action. The Dean will make certain that the student receives the F grade and is not permitted to withdraw from the course.
- The student may be placed on probation or suspended for some definite period of time, dismissed or expelled by the Dean if either the seriousness of the offense or a record of repeated offenses warrants it. A notation that such a sanction has been imposed will be made part of the student's permanent record. It is expected that the Dean will consult with the instructor and the student in making such a judgment, and that the Dean will notify the student of the sanction imposed and of the appeals procedure.

A student found to be academically dishonest by a faculty member may appeal according to procedures approved by the respective colleges. The procedures for making a final appeal to the Student Grievance Committee may be found in the Student Handbook.

