Fundamentals of Life Science II: Cells, Inheritance and Development

The University of Toledo
College of Natural Sciences and Math
10910 - BIOL 2170 - 003

Instructor:	Dr. William R. Taylor	Class Location:	Rocket Hall 1520
Email:	william.taylor3@utoledo.edu	Class Day/Time:	TR/1:00 pm - 2:40 pm
Office Hours:	T/R 3:00 pm -5:00 pm (or by appt)	Credit Hours:	4
Office Location:	WO4262		
Office Phone:	419 530 1966		
Term:	Spring 2017		

COURSE/CATALOG DESCRIPTION
A general introduction to cell structure and function, energy processing in plants and animals, basic genetics, molecular biology and development.

STUDENT LEARNING OUTCOMES
Students who successfully complete this course will be able to:
- Illustrate the scientific method through analysis of major biological discoveries.
- Outline the structure and function of the types of macromolecules found in all living organisms.
- Describe the structure and function of cells and the metabolic reactions that occur in cells.
- Explain the process of inheritance.
- Understand different types of mutations and their effects on gene products and on phenotype.
- Describe how RNA, DNA and proteins are synthesized.
- Explain the process of cell division in both somatic and germ cells.

PREREQUISITES AND COREQUISITES
Undergraduate level CHEM 1090 Minimum Grade of D- or Undergraduate level CHEM 1230 Minimum Grade of D- or Undergraduate level BIOL 2150 Minimum Grade of D- or Chemistry Placement 20.

REQUIRED TEXTS AND ANCILLARY MATERIALS
How Life Works – by Morris, Hartl, Knoll, and Lue

TECHNOLOGY REQUIREMENTS
Access to Launchpad Portal for How Life Works (required for homework).
Clickers are required for extra credit, in-class exercises.

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.

ACADEMIC POLICIES

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.

GRADING

		Points
Test 1	Jan. 26	100
Test 2	Feb. 16	100
Test 3	March 21	100
Test 4	April 11	100
Top three tests		300
Homework		50
Final Exam	(May 3rd, 2:45-4:45pm)	150
	Total	500
Clickers		20 - - - (EXTRA CREDIT)

Your final grade will be calculated from three (of four) best tests, homework, and the final comprehensive exam. There will be four 50 minute in-class tests and one comprehensive two-hour final examination. Exams will cover what was taught in lectures and the appropriate textbook material. The in-class tests will usually consist of 50 multiple choice questions, with the possibility of some short answer or problem-solving questions. The final exam is comprehensive and will cover the entire semester. The final exam will have 100 multiple choice questions, with the possibility of some other types of questions. Tests 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.

Grade	% Correct	Grade	% Correct
A	90-100	C+	71-74
A-	87-89	C	65-70
B+	83-86	D+	59-64
B	79-82	D	55-58
B-	75-78	D-	51-54
F	0 - 50		

*Any student who stops attending class after taking the first test will receive a grade F for all the missed tests, unless such student withdraws from the course.*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 at the earliest possible time.

The following rules apply to all the exams and classes of this course:
-Bring two number 2 (#2) pencils, an eraser, and your valid UT student ID card to an examination.
-Examinations start and end at specified times. Students will not be admitted to an exam which has been in progress for longer than 10 minutes. Extra time will not be given to students who are late for an exam.
-All exams must be taken at the scheduled time with the section for which you are officially registered.
-If the University is closed on a day scheduled for a test, your test will be given during the next time class is held.
-I DO NOT GIVE MAKE-UP TESTS. If you miss a test, that test will be counted as your lowest scoring test and dropped from your final score. If you know in advance that you must legitimately miss a test, see me to schedule an early test.
-Errors in test grading should be brought to my attention within one week of the time you receive your corrected examination.

Homework: The homework component of the course will consist of online quizzes that will have questions related to the material covered in the lectures. The quizzes must be completed by the assigned due dates.

COURSE SCHEDULE

	DATE	TOPIC	CHAPTER
JANUARY	10	Life	1
	12	The Molecules of Life	2
	17	Nucleic Acids and the Encoding of Biological Information	3
	19	Translation and Protein Structure	4
	24	Organizing Principles: Lipids, Membranes and Cell Compartments	5
	26	**EXAM 1**	
	31	Making Life Work: Capturing and Using Energy	6
FEBRUARY	2	Cellular Respiration: Harvesting Energy from Fuel Molecules	7
	7	Photosynthesis: Using Sunlight to Build Carbohydrates	8
	9	Cell Communication	9
	14	Cell Communication	9
	16	**EXAM 2**	
	21	Cell Form and Function: Cytoskeleton, Cellular Junctions and the Extracellular Matrix	10
	23	Cell Form and Function: Cytoskeleton, Cellular Junctions and the Extracellular Matrix	10
	28	Cell Division: Variations, Regulation and Cancer	11
MARCH	2	Cell Division: Variations, Regulation and Cancer	11
	6-10	SPRING BREAK	
	14	DNA Replication and Manipulation	12
	16	DNA Replication and Manipulation	12
	21	**EXAM 3**	
	23	Mutation and DNA Repair	14
	28	Mutation and DNA Repair	14
	30	Genetic Variation	15
APRIL	4	Mendelian Inheritance	16
	6	Mendelian Inheritance	16
	11	**EXAM 4**	
	13	Beyond Mendel: Sex Chromosomes, Linkage and Organelles	17
	18	Genetic and Epigenetic Regulation	19
	20	Genetic and Epigenetic Regulation	19
	25	REVIEW	
	27	TBA	
	MAY 3	**FINAL EXAM (2:45-4:45) Wednesday**	