BIOL 3030 Cell Biology

The University of Toledo
Department of Biological Sciences
BIOL3030-001

Instructor:	Dr. Deborah J. Vestal	Class Location:	FH2100
Email:	Deborah.Vestal@utoledo.edu	Class Day/Time:	Tues/Thurs 8:00-9:15am
Office Hours:	9:20-10 am Tues/Thurs. By appt.	Credit Hours:	3
Office Location:	BO 1098/BHS 391		
Office Phone:	419-383-4134		
Term:	Spring 2015		

CATALOG DESCRIPTION: A study of the internal organization of the eukaryotic cell, organelle and membrane function, cell-cell signaling, cell movement, cell adhesion, the extracellular matrix.

COURSE OVERVIEW: The focus of Cell Biology is the study of the structure and function of the cell. In this course we will focus on Eukaryotic cell biology and will cover topics such as membrane structure and composition, transport, and trafficking; the cytoskeleton and cell movement; the breakdown of macromolecules and generation of energy; and the integration of cells into tissues. We will also cover important cellular processes such as cell cycle regulation, signal transduction, apoptosis (programmed cell death), and cancer cell biology. Throughout the semester we will attempt to relate defects in these various cellular processes to human diseases to help gain a better understanding for what happens when cells don't work as they should.

STUDENT LEARNING OUTCOMES:
Upon completion of this course, the student will be able to:

1) Describe the fundamental principals cellular biology.
2) Apply these principals to current biological questions of today.
3) Develop a deeper understanding of cell structure and how it relates to cell functions.
4) Understand cell movement and how it is accomplished.
5) Understand how cells grow, divide, and die and how these important processes are regulated.
6) Understand cell signaling and how it regulates cellular functions. Also how its dis-regulation leads to cancer and other diseases.

TEACHING STRATEGIES: Instead of the traditional lecture approach, we will be using an "active learning" approach. The course lectures were taped previously and will be posted on Blackboard. The expectation is that you will have listened to, digested, and learned the material from the lecture for each class prior to attending class. During class you will take one or more clicker quizzes to evaluate your proficiency with the material and to identify areas of confusion for the class. The in-class time will be spent in discussion of the material and in trying to clear up areas of confusion. Success will require that you have done the work assigned before class and come with questions and areas that you feel need additional clarification. Class attendance, as determined by your participation in the clicker quizzes, will be 5% of your final grade. Your grades on the in-

class clicker quizzes will make up 15% of your final grade. Together these are 20% of your grade. There are no make-ups for clicker quizzes.

PREREQUISITES: BIOL 2170 with a minimum grade of C and CHEM 1240 with a minimum grade of D-.

REQUIRED TEXT: Lodish et. al. *Molecular Cell Biology*. Seventh Edition. Freeman Press.
ISBN-13: 978-1-4292-3413-9
ISBN-10: 1-4292-3413-X

A free Companion Website accompanies the book at http://bcs.whfreeman.com/lodish7e . There you will find additional activities and resources.

TECHNOLOGY REQUIREMENTS: Course materials and video lectures will be posted on Blackboard. Therefore you must have the ability to access Blackboard and to open and watch Echo360 videos. Clickers will also be required for each class.

UNIVERSITY POLICIES:

Policy Statement on Non-Discrimination on the basis of Disability (ADA). 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.

Academic Accommodations. The University of Toledo is committed to providing equal access to all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustment in this course, please contact the Student Disability Services Office.

IMPORTANT DATES

Jan. 16-Add via web ends
Jan. 26-Last day to drop
Feb. 3-EXAM I
Mar. 3-EXAM II
Mar. 27-Last Day to Withdraw
Mar. 31-EXAM III
May 5-FINAL EXAM (8:00 am-10:00 am)

REVIEW SESSIONS
There will be a review session each of the Saturdays before an exam. They will be from 9 am until about 11 am in the morning. Attendance is optional but recommended. Rooms to be determined.

Saturday Jan. 31th
Saturday Feb. 28th
Saturday Mar. 28th
Saturday May 2nd

STUDENT EVALUATION/Grading

In addition to attendance and clicker quizzes, there will be three in-class exams during the semester. The first will count for 10% of your final grade and the second and third will each count for 20% of your final grade. The final exam will count for 30% of your final grade.

The in-class exams will consist of a combination of multiple-choice, short answer, and short essay questions. These exams will only cover new material (i.e.-material covered since the previous exam)

The final exam will be comprehensive and will likely consist of multiple-choice, short answer, and short essay questions. About 70% of the final exam will cover topics discussed since the third exam. The remaining 30% will cover topics discussed from the start of the semester. This means that the final is comprehensive.

Students arriving more than 10 minutes late for an exam will not be allowed to take the exam. In addition, under no circumstances will students be able to take an exam once other students have completed the exam and left the room.

Bring 2-3 sharpened number 2 pencils with good erasers to the exam.

Students must present a picture I.D. to the instructor or proctors when turning in exams.

If an exam is missed, I must be notified within 48 hours and documentation of the reason for missing the exam should be provided. Acceptable excuses include a death in the immediate family and illness of the student.

Make-up exams will be given at the discretion of the instructor. They will not be the same as the exam taken by the rest of the class and will consist primarily of essay type questions. Because of this, it is likely that make-up exams will be more difficult than the exam taken in class.

Exams will be based on materials from lectures and assigned textbook readings, however material covered in the lectures will be emphasized. Students should listen to the taped lecture and take detailed notes. Be prepared to contribute to scheduled classes by taking quizzes and by asking questions about anything you are not completely clear about.

If you chose to stop attending class, be sure to withdraw. If you take one or more exams and then stop attending class but do not withdraw you will receive the grade that you earn after receiving zeros for the remaining exam. Be certain that without withdrawing you will still receive a letter grade.

Mid-term grades will be calculated by calculating the percentage of the total points earned by a student at the mid-term. For example, if 40% of the total points for the class have been awarded at mid-term and a student has earned 60% of those points, then the student's grade would be a D.

TENTATIVE GRADING SCALE

% of available marks	Grade	Standard
90-100	A	Achievement of outstanding quality
88-89	A-	Achievement of slightly less than outstanding quality
85-87	B+	Achievement of slightly more than high quality
78-84	B	Achievement of high quality
75-77	B-	Achievement of slightly less than high quality
73-74	C+	Work of slightly more than acceptable quality
64-72	C	Work of acceptable quality
62-63	C-	Work of slightly less than acceptable quality
61-62	D+	Work slightly above the quality expected
52-60	D	Work below the quality expected
50-51	D-	Work slightly below the quality expected

CLASS SCHEDULE (Tentative)

Jan.	13	Introduction to Cell Biology
	15	Protein Structure and Function
	20	Protein Structure and Function/Membranes and Cell Architecture
	22	Membranes and Cell Architecture
	27	Membranes and Cell Architecture
	29	Membrane Transport
Feb	3	**EXAM 1**
	5	Cellular Energetics
	10	Translation Overview
	12	Membrane Trafficking
	17	Membrane Trafficking
	19	Vesicular Traffic, Secretion, and Endocytosis
	24	Vesicular Traffic, Secretion, and Endocytosis
	26	Metabolism and Movement of Lipids
Mar.	3	**EXAM 1I**
	5	Cytoskeleton-Microfilaments and Intermediate Filaments
	10	Spring Break
	12	Spring Break

	17	Finish Microfilaments/Cytoskeleton-Microtubules
	19	Finish Microtubules
	24	Integrating Cells into Tissues
	26	Integrating Cells into Tissues
	31	**EXAM III**
April	2	Cell Signaling
	7	Cell Signaling
	9	Signaling Pathways that control Gene Activation
	14	Signaling Continued/ Cell Birth, Lineage, and Death
	16	Cell Birth, Lineage, and Death
	21	Cell Cycle and Cell Growth Control
	23	Cell Cycle and Cell Growth Control
	28	Cancer Cell Biology
	30	Cancer Cell Biology
May	5	**FINAL EXAM-8:00-10:00 am**

TOPIC	**BOOK CHAPTER**
Introduction to Cell Biology	Chap. 1
Protein Structure/Function	Chap. 3
Biomembrane Structure	Chap. 10 (parts 1 and 2)
Membrane Transport	Chap. 11

EXAM I

Cellular Energetics	Chap. 12
Translation Overview	Chap. 4 (4.3 and 4.4)
Moving proteins into membranes and organelles	Chap. 13
Vesicular Traffic, Secretion, and Endocytosis	Chap. 14
Metabolism and Movement of Lipids	Chap. 10.3

EXAM II

Cellular Organization and Movement	
Microfilaments	Chap. 17
Microtubules and intermediate filaments	Chap. 18
Integrating Cells into Tissues	Chap. 20

EXAM III

Signal Transduction and G protein-coupled receptors	Chap. 15
Signaling Pathways that Control Gene Activation	Chap. 16
Stem Cells, Cell Asymmetry, and Cell Death	Chap. 21
The Eukaryotic Cell Cycle	Chap. 20
Cancer	Chap. 24

FINAL EXAM

COMMUNICATION GUIDELINES:

Email: As your instructor, I want to see you succeed in this class. If you have questions or concerns, please feel free to email me and I will do my best to respond with 24 to 48 hours. Students are expected to check their UT email accounts frequently for important course updates/information.

Office visits: If you want to speak with me during office hours, please let me know by email or in class that morning. If office hours are not convenient for you, we can set up an appointment.

ACADEMIC POLICIES: As a student in this course and enrolled at The University of Toledo you should be familiar with the policies that govern the institution's academic processes. For example, Academic Dishonesty, Enrollment Status, and Grades and Grading. Please read Undergraduate Academic Policies.

STATEMENT OF ACADEMIC DISHONESTY

Department of Biological Sciences

Academic dishonesty by students enrolled in undergraduate and graduate courses and programs offered by the Department of Biological Sciences will not be tolerated. Academic dishonesty includes but is not limited to:

1. Obtaining assistance from another individual during an examination.

2. Giving assistance to another individual during an examination.

3. The unauthorized use of study material or textbooks during an examination.

4. Changing answers on an examination after it has been returned and then submitting it for regrading.

5. Plagiarizing written assignments. Plagiarizing includes but is not limited to: a) Copying laboratory reports from previous years, b) copying or paraphrasing reports, term papers, or these prepared by other students, c) unauthorized collaboration in the preparation of reports, term papers, or theses, and d) use of another author's materials without appropriate acknowledgement through quotation and citation.

6. Attempting to bribe or otherwise induce an instructor to alter either a grade or examination score.

7. Obtaining or attempting to obtain a copy of an examination prior to its administration.

In accordance with policies presented in The Student Handbook and The University Catalog, Instructors have the responsibility and right to report cases of alleged dishonesty to departmental, college, and university administrative units. Students involved in academic dishonesty may expect to receive a grade of F on specific assignments as well as in the course where the assignment was made. In addition, disciplinary action may be recommended through appropriate college and university disciplinary committees. Please consult your instructor for instructions on the implementation of this policy.