Biology 168: Honors Cellular and Molecular Biology
3 credits lecture and discussion
The University of Tennessee, Spring 2018

Lecture: Tuesdays and Thursdays 10:00 am-10:50 am, Haslam business bldg., room 104
(February 22nd and March 1st class times are from 9:40-10:55am, no class on February 27th)

Lecture Instructor: Dr. Maitreyi Das (mdas@utk.edu)
Office Hours (F235 Walters Life Sciences): Tuesdays 1:30 pm-3:30 pm;
Other meetings by appointment only;

BioLit: 50 minutes hours per week in 114 Neyland Biology Annex; 25% of your course grade.
Discussions start the week of January 15 (see your schedule for discussion time)

BioLit Coordinator: Dr. Caroline Wienhold, caroline.wienhold@utk.edu
Dr. Stephanie Madison, smadiso2@vols.utk.edu
(You MUST talk to Drs. Wienhold or Madison with any question regarding discussion sections)

BioLit Instructor/TA: Spiro Papoulis, SERF 635, spapouli@vols.utk.edu, phone: 865-974-2219

Lecture exams: Exams will be proctored outside of regular lecture periods. Exams 1, 2, and 3 will be held from ***6.30pm to 8:00 pm*** on Mondays, February 5, March 5 and April 2. Final exam will be on May 3th from **8:00am to 10:00am.**

What you should learn in this course (and for a Biology degree)
By the end of the course, you should be able to explain how scientists define and study cells, as well as how ***five big ideas (FBIs)*** in biology relate to the topics we have discussed:

- **Evolution**: Populations of organisms and cells, including their molecular components, have changed over time through both selective and non-selective evolutionary processes.
- **Structure and Function**: All living systems (cells, organisms, ecosystems, etc.) are made of structural components whose arrangement determines the function of the systems.
- **Information Flow and Storage**: Information (DNA, for example) and signals are used and exchanged within and among cells and organisms to direct their functioning.
- **Transformations of Energy and Matter**: All living things acquire, use, and release and cycle matter and energy for cellular / organismal functioning.
- **Systems**: Living systems are interconnected, and they interact and influence each other on multiple levels.

You should also be proficient in the following **five scientific practices (FSPs)**:

- Formulate empirically-testable hypotheses; ask scientific / critical questions
- Synthesize information and identify patterns (from readings or data)
- Interpret visual representations (figures and diagrams)
- Evaluate data and come to a conclusion (with evidence) (formulate an argument)
- Communicate information in writing

Course Description: Intended for science majors. An introduction to the major biological concepts emphasizing the cellular and molecular aspects of life. Organized along themes of evolution, structure and function,

information flow, exchange and storage, pathways of energy and matter, and systems. ***Satisfies General Education Requirement: (NS)***

How you will learn the material

Learning results from being actively engaged with the material, repeatedly and in many forms. You are expected to come to class being prepared by having read the sections assigned for the lecture and by having completed any pre-class assignment. Being prepared for lecture is essential to succeed in the course, this includes having taken Canvas quizzes or mastering biology assignments as they arise. The lectures will be constructed assuming you will be responsible enough to prepare as indicated. You will be expected to participate in class discussions and activities and to complete assignments and homework on time. These activities are implemented to help you learn and master the concepts. MasteringBiology includes study modules that can also help you learn. The information will be presented in an organized fashion to facilitate learning and will thrive to focus on the most challenging concepts. In addition, the instructors will provide you with many activities and assignments to facilitate your engagement with the material as well as to test your understanding, **but you will have to devote time outside of lecture to synthesize and link the concepts together.** Quizzes and tests, given in class or on Canvas, will test your understanding of the concepts, NOT just your ability to memorize information.

Lecture Schedule ****This schedule is tentative and subject to change!**** *Jan 20 - Last day to drop without a "W"; Apr 4- Last Day to Drop with a "W"(WP/WF); Apr 28 - Last Day for a University Withdrawal*	**Reading assignments** (Readings must be completed PRIOR to lecture; other readings may be assigned)
January 11 Class Introduction, Cell theory	(chapter 1.2)
January 16 Chemical elements, chemical bonds, water, functional groups January 18 Biological Macromolecules /Proteins	(chapter 2.1 ,2.2, 2.5) (chapter 3)
January 23 Biological Macromolecules / Nucleic acids January 25 Biological Macromolecules / Carbohydrates	(chapter 4) (chapter 5)
January 30 Biological Macromolecules/Lipids February 1 Membranes and transport across membranes	(chapter 6.1-6.3) (chapter 6.4)
Monday February 5: EXAM 1 6.30-8.00 pm February 6 Inside the Cell February 8 Introduction to energy Enzymes and Metabolism	 (chapter 7) (chapter 2.3; 8.1-8.2)
February 13 Introduction to energy Enzymes and Metabolism February 15 Harvesting Chemical Energy: respiration	(chapter 8.3-8.5) (chapter 9.1-9.2)
February 20 Harvesting chemical energy: respiration and fermentation February 22 (9:40- 10:55am) fermentation/Photosynthesis	(chapters 9.3-9.5) (chapters 9.6, 10.1-10.2)
February 27 no class March 1 (9:40- 10:55am) Photosynthesis	(chapters 10.3) (chapters 10.3-10.4)
Monday March 5: EXAM 2 6.30-8.00 pm March 6 Cell cycle and cell division: organization of the chromosome March 8 Cell cycle and mitosis	 Chapter 12 (12.1 to 12.3 incl.) Chapter 12 (12.4)
March 13 SPRING BREAK- no class **March 15 SPRING BREAK- no class**	
March 20 Meiosis: recombination and diversity March 22 DNA replication: synthesis and repair	Chapter 13 Chapter 15 (15.1 to 15.4 incl.)

March 27 March 29	DNA replication: synthesis and repair How genes work	Chapter 15 (15.5) Chapter 16
Monday APRIL 2: Exam 3 6:30- 8:00 pm		
April 3 April 5	DNA to proteins: transcription DNA to proteins: RNA processing, translation	Chapter 17 (17.1) Chapter 17 (17.2-17.3)
April 10 April 12	DNA to proteins: translation Control of gene expression (Bacteria)	Chapter 17 (17.4-17.5) Chapter 18 (18.1-18.3)
April 17 April 19	Control of gene expression (Bacteria) Control of gene expression (Eukaryotes)	Chapter 18 (18.4-18.5) Chapter 19 (19.1-19.3)
April 24 April 26	Control of gene expression (Eukaryotes) Overview of BIO168	Chapter 19 (19.4-19.6)
Final Exam Thursday May 3th 8:00 – 10:00 a.m. *As per the registrar's website: "Final exams must be given during the final exam period at the scheduled time, although alternative uses of the scheduled exam period may be designated by the instructor. Students are not required to take more than two written exams on any day. The instructor(s) of the last non-departmental exam(s) on that day must reschedule the student's exam during the exam period.* ***It is the obligation of students with such conflicts to make appropriate arrangements with the instructor at least two weeks prior to the end of classes."***		Cumulative

Technology: While in class, keep all electronic devices out of sight unless needed. The use of laptops and smartphones in class will be discussed the first week of class. **During exams and quizzes, any electronic device seen on your desk or within sight will result in a grade of zero**.

Support for learning

Texts and Materials:

- REQUIRED Text: Freeman, et al. 2016. Biological Science (6th ed). Pearson Publishing. This book is available at the bookstore. You can also purchase it as an e-Book from Pearson Publishing directly (www.mastering biology.com). The library also has a limited number of copies on reserve.
- REQUIRED Mastering Biology software: free with purchase of a new textbook at bookstore; you can also purchase the software directly from Pearson as either Mastering with or without the e-Book. Course ID **MBDASBIO1682018** (use this to register for the course in Mastering Biology)
- **REQUIRED** – Learning Catalytics software: free with purchase of a new textbook at bookstore; you can also purchase the software directly from Pearson with Mastering with the e-Book.

Course website: http://online.utk.edu/ (Click "Login to Online@UT" to get to Canvas). You will have two Canvas sites for the course, one for your discussion section and one for lecture. The lecture site will be used regularly for communication and posting lecture syllabus, extra readings, assignments, course grades, etc.

Communications:

- You need to regularly check your UTK e-mail account for weekly announcements related to this course. If you are not receiving those e-mails, there is something wrong with your account! If this is the case, OIT will be able to help you.
- If you need to meet and can't make office hours, please use your UTK e-mail (spam filters may exclude other addresses) to schedule a meeting.

- I am happy to answer your e-mail questions, but allow up to 24 hours (or next working day) for a response. Also, once I leave my office I may not check my e-mail until the following workday, or the first day back after a weekend.

Study Rooms:

417 Hesler is a quiet study room for majors in Biology. It can also be reserved for group study. There is also a student study room in Neyland Biology Annex, room 103.

Assessment of your learning

Assessment (quizzes, exams, assignments) is very important to the learning process. It lets you and I know what you understand and what you do not. I quiz often because it encourages you to keep up with your studying and helps you learn – every time you have to re-process information you learn more! It also gives me an important feedback mechanism to know what parts of the syllabus are more challenging.

Although much of the assessment in this course will be multiple choices, I will also use short answers and may use written assignments to deepen your understanding.

Lecture: (75% of grade; 750 points)

Exams 1, 2 and 3 (12% or 100 pts each; multiple choices and short answers)	300 points
Final exam = Exam 4 (with cumulative part representing 25% of total)	150 points
Quizzes and Assignments (approximate break-down below)	
Learning Catalytics/Canvas quizzes and in-class group activities -	10% or 100 points
Take home assignments	5% or 50 points
Mastering biology assignments	15% or 150 points

Discussion: (25% of grade; 250 points) – See discussion syllabus

Exams / Quiz / Assignment Policies:

- NO make-up quizzes, in-class activities, learning catalytics points, in-class or mastering biology assignments will be given; there will be "extra" quiz points built into the course to allow for missing classes, etc.
- The quizzes may or not be announced and will be delivered in-class or prior to class on Canvas. The quizzes may pertain to assigned chapter and/or section readings prior to the day lecture or from a past lecture.
- The quizzes and assignments (masteringbiology, learning catalytics and Canvas quizzes) MUST be taken and are NOT optional.
- The 2 lowest masteringbiology assignments and the 4 lowest learning catalytics scores will be dropped. Dropping the lowest score is intended to cover any problem such as having computer or internet access issues, missing class etc.
- NO make-up exams will be given without a valid excuse (e.g., family emergency, medical emergency, etc). The excuse MUST be documented.
- **VERY IMPORTANT**: If you are going to miss an exam, you MUST contact us prior to the start of the exam. Send us an e-mail, and if you don't' receive an acknowledgment of your email, send it again
- Make-up exams may be short answers, fill-in-the-blanks, or essay and will be scheduled at the instructor's convenience and by their permission only.
- Assignments turned in after the due date will lose 25% of the points per 24 hours after the deadline.

- All work should be done independently (unless group work is permitted, and then you may ONLY work within your group on the assignment); plagiarism software will be used to check written assignments for copying from classmates or other sources. **Plagiarism will result in stiff penalties – please see section below.**
- Exams will be prepared from all information sources: lecture, textbook, assigned reading outside of the textbook or handouts.
- Exam, quiz, assignments and activity scores will be posted on our class Canvas site (online@UT)
- **Be aware that no individual credit will be available for this class outside of what each instructor may offer for the entire class, i.e., no extra credit may be offered to a single student or a group of students if it is not also offered to the entire class.**

Final letter grades will be determined by the total percentage of 1,000 points accumulated as follows:

A	93 – 100%	C	73 – 76%
A-	90 – 92%	C-	70 – 72%
B+	87 – 89%	D+	67 – 69%
B	83 – 86%	D	63 – 66%
B-	80 – 82%	D-	60 – 62%
C+	77 – 79%	F	<60%

Academic integrity:
Academic dishonesty of any sort will not be tolerated. Plagiarism includes the copying of phrases, portions of sentences or the main ideas from ANYONE (including a classmate) on ANY work submitted for a grade (exams, assignments, quizzes, etc). Academic dishonesty also includes assisting other students on quizzes or exams.

You are expected to abide by The University of Tennessee honor statement in Biology 130 and in all of your university activities as pledged in the honor code:

> ***"An essential feature of the University of Tennessee, Knoxville, is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."***
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> (*2012-2013 Undergraduate Catalog*)

Depending on the offence, penalties for academic dishonesty range from a minimum of a zero for the assignment, to an F for the course, to the filing of formal academic dishonesty charges seeking dismissal from The University of Tennessee. These choices are at the discretion of the instructor, and can occur in either the lecture or the lab portion of the class.

You should be familiar with the requisites of academic honesty and what constitutes academic dishonesty as outlined in the UT Undergraduate Catalog (http://catalog.utk.edu/).

Other course information
Tennessee Education Lottery Scholarship Recipients: All courses for which you are enrolled count toward your attempted hour total. You must receive approval from the Office of Financial Aid & Scholarships when withdrawing from UT or changing your enrollment status from full-time to part time in order to maintain good standing for the TELS program. Approvals are only issued for extraordinary circumstances, such as the death of an immediate family member, documented serious illness, or military mobilization. See Financial Aid website at: http://web.utk.edu/~finaid

Disability Services: If you need course adaptations or accommodations because of a documented disability, please contact me privately to discuss your needs. If you have questions or concerns about disabilities or emergency information to share, please contact Disability Services: 2227 Dunford Hall; 974-6807; Email: ods@utk.edu; Website: http://ods.utk.edu/).

Counseling Center: http://counselingcenter.utk.edu/
900 Volunteer Boulevard
865 974-2196, Email: counselingcenter@utk.edu

Academic Assistance:
Tutoring: The Division of Biology does not offer tutoring services. Contact the Student Success Center and the Academic Support Unit of The Office of Minority Student Affairs for information about tutoring opportunities.

- **Student Success Center:** The comprehensive source for information, services, and resources to assist your success at UT: http://studentsuccess.tennessee.edu/studentsuccesscenter/
    - 1817 Melrose Avenue, and 812 Volunteer Boulevard, 865 974-6641, Email: studentsuccess@utk.edu
- **Academic Support Unit of The Office of Minority Student Affairs** offers some tutoring services available to all students, but openings are limited and are filled quickly. The office offers other types academic assistance and support as well: http://omsa.utk.edu/services/
    - 1800 Melrose Avenue, 865 974-6861, Email: omsa@utk.edu

Technical Assistance:
Canvas, or general information technology assistance:

- http://remedy.utk.edu/contact/
- Help Desk: 865 974 9900 (M – F, 8:00 – 5:00)
- OIT Computer Support Service Center and Walk-In Help Desk: Commons South, 2nd floor Hodges Library