

## *Course Syllabus*

### **Course Information**

BIOL 2311. Introduction to modern biology BIOL 2311. Class meets Tuesdays and Thursdays between 11:30-12:45 in GR 3.420

### **Professor Contact Information**

Dr. Suma S Robinson. Phone: 972 883 4588 e-mail: [sxs022500@utdallas.edu](mailto:sxs022500@utdallas.edu).  
Office: FN 3.104, Office hours: 9:00-9:45 am, TR or by appointment

### **Course Pre-requisites, Co-requisites, and/or Other Restrictions**

Pre-requisites: Chemistry 1311 and 1313 (General Chemistry)  
Co-requisites: BIOL 2111 (Introduction to modern biology workshop)

### **Course Description**

This course is designed to give students information about the basic concepts of biology with an emphasis on the molecular and cellular basis of biological phenomena. Topics include the chemistry and metabolism of biological molecules, elementary classical and molecular genetics, selected aspects of developmental biology, as well as study of major groups of biological organisms such as bacteria, viruses and fungi.

### **Student Learning Objectives/Outcomes**

1. Students will be able to describe principles of modern biological topics such as hypotheses testing, existing hypothesis regarding concepts such as origin of the first self-replicating molecule and the genetic code. They will also be able to state and explain well-documented and thoroughly researched topics such as DNA replication, effects of mutation, Mendelian genetics, structure of cell molecules and introduction to cell development
2. Students will also be able to explain in detail the processes by which cells assemble the proteins it needs, the manner in which these proteins are determined

- and the possibilities which arise due to errors in this system, i.e. they will be able to explain transformation, translation and the control of these processes within the cell. Students will also be introduced to modes of communication between cells of multicellular organisms
3. Students will be able to understand basic metabolic pathways and understand how cells derive energy from various sources.
  4. Students will be able to explain in detail the process of photosynthesis, the enzymes involved in this important activity and the factors which influence it.
  5. Students will be able to explore the basics of cell structure, function and effect on human life of groups such as bacteria, viruses, archaea, protists and fungi
  6. Students will be introduced to the principles of genetic engineering, the concepts underlying this field and its applications in the world of agriculture and biomedical industry among others

### Required Textbooks and Materials

Required text: Biological Science by Scott Freeman, 2<sup>nd</sup> edition, volume 1 (the cell, genetics and development) published by Prentice Hall.

### Suggested Course Materials

There are no other suggested course materials

### Assignments & Academic Calendar

Date and day	Chapter, topic	Assigned reading and workshop material
January 8, T	Chap 1. Biology and the tree of life.	Why are chili peppers hot?
January 10, Th	Chap 2. Atoms and molecules of ancient Earth	Properties of water
January 15, T	Chap 3: Protein structure and function. Part-I	Function of proteins in cells
January 17, Th	Chapter 3: Protein structure and function. Part-II	Enzymatic explanation for the phenomenon termed “zero tolerance for alcohol”
January 22, T	Chap 4. NA and the RNA world	Dimensions of DNA secondary structure
January 24, Th	Chap 5. An introduction to carbohydrates	How some antibiotics kill bacteria
January 29, T		<b>TEST I</b>

January 31, Th	Chap 6 Lipids, membranes and the first cell	Does adding cholesterol to a membrane affect its permeability?
February 5 , T	Chap 7. Inside the cell	Cell structure correlates with function
February 7, Th	Chap 8. Cell to cell interaction	Do animal cells adhere selectively?
February 12, T	Chap 9. Cellular respiration and fermentation	Relationship between anabolism and catabolism
February 14, Th	Chap 10. Photosynthesis	What happens to the sugar that is produced by photosynthesis?
February 19, T		<b>TEST- II</b>
February 21, Th	Chap 11. The cell cycle	Properties of cancer cells
February 26, T	Chapter 12: Meiosis	Seedless fruits
February 28, Th	Chap 13. Mendel and the gene	How does the physical environment affect phenotype?
March 4, T	Chap 14. DNA synthesis	<i>Xeroderma pigmentosum</i>
March 6, Th	Chap 15. How do genes work?	Exception to the central dogma
March 11 , T	Spring Break	
March 13, Th	Spring Break	
March 18, T		<b>Test III</b>
March 20, Th	Chap 16: Translation and transcription	Comparing transcription in bacteria and eukaryotes
March 25, T	Chap 17. Control of gene expression in bacteria	Similarities and contrasts in control of the <i>trp</i> and <i>lac</i> operon
March 27 , Th	Chap 18. Control of gene expression in eukaryotes	Fly eyes and other strange tales of gene regulation
April 1, T	Chapter 19: Analyzing and engineering genes	Why are viruses not the 'ideal vectors' they appear to be for delivery of normal human alleles
April 3, Th	Chap 20: Genomics	Designing vaccines
April 8, T		<b>Test IV</b>
April 10, Th	Chap 21, 22: Introduction to development, pattern formation and differentiation	
April 15, T	Bacteria & Archaea,	Lecture notes
April 17 Th	Fungi,	Lecture notes
April 22, T	Protists	Lecture notes
April 24, Th	Viruses	Lecture notes
April 29, T		<b>Test V</b>

## Course & Instructor Policies

1. Each test from tests I to IV is worth 50 points. You will be allowed to drop your lowest score of the four tests after you have taken all four, provided you make at least 69.6% as your lowest score. Test V will include some material from earlier chapters and will be worth 100 points. You will be provided with a list of these topics during workshop. Your final grade will be calculated based on the points made out of 250.
2. If you do not take all four tests your grade will be calculated on points made out of 300. Thus it is in your best interest to make sure you take all four tests.
3. Letter grades are calculated as follows: 100-89.6% is A, 89.5-79.6% is B, 79.5-69.6 is C, 69.5-59.5 is D and less than 59.5 % is F. The detailed breakdown is as follows: 89.6-93.4 % is an A minus, 93.5-96.4 is an A and 96.5 % and above is an A plus, the same scale applies to B, C and D grades.
4. The grade you will be assigned for workshop is the same as the lecture grade.
5. Each workshop will be conducted by a teaching assistant and will cover topics discussed during both lectures of the week. Workshops will be used to discuss and review material including those categorized as assigned reading. In addition tests will be handed back and the key discussed, TAs will also discuss study guides for each chapter.
6. Workshop attendance is mandatory. You will attend only the workshop assigned to you.
7. If you have any questions regarding grading, change in scores or any other issues, please discuss it with me **within a week** of getting your tests back. No test papers will be re-evaluated after this time period.
8. Students are expected to read lecture chapters prior to class, be prepared for 'pop' quizzes.
9. Unless there is a documented medical emergency, no make-up tests will be possible. Make-up tests are usually more difficult than the scheduled ones in addition to having a different grading system, thus it is in your best interest to take tests when scheduled.
10. Please come to class on time and do not leave early unless you have discussed it with me prior to class.

11. Academic dishonesty in any form will not be tolerated and will be handled according to the rules and procedures of the University of Texas at Dallas.  
Tests and exams

And for some other details.....

1. Make sure your TA has been notified of any changes in scores
2. Do not compare your paper with someone else's, if you do, be prepared to bring his/her paper to me for further evaluation of both papers.
3. Keep track of your scores and be aware of your standing in the course, check periodically with your TA.
4. Only pens are to be used when writing answers to quizzes and exams.
5. Hand your completed tests and exams directly and only to the proctor.
6. Please make sure you write your name and your TA's name on your tests.
7. I will re-word test questions for you if need be, don't hesitate to ask if you are not sure of the question.
8. Make sure you attend all review sessions etc organized by the TAs, do not miss any workshop, all material covered during workshop will be on the tests.
9. Exams will be based on all the material covered during lectures as well as assigned reading topics and lecture notes. Questions will be a combination of multiple choice as well as a variety of short-answer type questions.
10. If you have concerns or questions regarding any aspect of the course bring it to my attention as soon as possible, all communication will be kept strictly confidential.

## **Technical Support**

If you experience any problems with your UTD account you may send an email to: [assist@utdallas.edu](mailto:assist@utdallas.edu) or call the UTD Computer Helpdesk at 972-883-2911.

## **Field Trip Policies**

### **Off-campus Instruction and Course Activities**

*Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address*

*[http://www.utdallas.edu/BusinessAffairs/Travel\\_Risk\\_Activities.htm](http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm). Additional information is available from the office of the school dean. Below is a description of any travel and/or risk-related activity associated with this course.*

## **Student Conduct & Discipline**

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD printed publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Series 50000, Board of Regents, the University of Texas System*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391) and online at <http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-HOPV.html>

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

## **Academic Integrity**

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic Dishonesty, any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for

another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

### **Copyright Notice**

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials, including music and software. Copying, displaying, reproducing, or distributing copyrighted works may infringe the copyright owner's rights and such infringement is subject to appropriate disciplinary action as well as criminal penalties provided by federal law. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. As a UT Dallas student, you are required to follow the institution's copyright policy (Policy Memorandum 84-I.3-46). For more information about the fair use exemption, see <http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm>

### **Email Use**

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

### **Withdrawal from Class**

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

## **Student Grievance Procedures**

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

## **Incomplete Grade Policy**

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.

## **Disability Services**

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:  
The University of Texas at Dallas, SU 22  
PO Box 830688  
Richardson, Texas 75083-0688  
(972) 883-2098 (voice or TTY)  
[disabilityservice@utdallas.edu](mailto:disabilityservice@utdallas.edu)

If you anticipate issues related to the format or requirements of this course, please meet with the Coordinator of Disability Services. The Coordinator is available to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with Disability Services to notify them of your eligibility for reasonable accommodations. Disability Services can then plan how best to coordinate your accommodations.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

### **Religious Holy Days**

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

***These descriptions and timelines are subject to change at the discretion of the Professor.***