

# Functional Biology – BIO 1430

Instructor, Michele Green  
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- Biology Department Website: [www.bio.txstate.edu](http://www.bio.txstate.edu)
- Class Website: TRACS and also [www.bio.txstate.edu/~mgreen/1430](http://www.bio.txstate.edu/~mgreen/1430)
- Office Hours: T, Th 12:30 – 1:45 pm or by appointment

## I) Course Description

Biology 1430 focuses on the important features of life at the molecular and cellular levels.

## II) Class Meeting Schedule

Tuesdays and Thursdays, 2:00 – 3:15 pm. Lectures will be held in SUPP 116.

## III) Attendance

Attendance is necessary for successful completion of the course. Also, bonus points will be awarded to those students who attend lectures on a regular basis. Students with 0 – 1 absences will receive two extra credit points added to their final average. Students with 2 – 4 absences will receive one extra credit point added to their final average.

An attendance sheet will be passed around while the lecture is in session, and if you leave the lecture early after signing the attendance sheet, you will not get credit for that day. ***If you try to have another student sign the sheet for you, or if you sign for another student, you will lose the privilege of earning any attendance credit or extra credit points of any sort.*** Please arrive on time for lectures. Late arrivals are very disruptive to everybody.

## IV) Course Objectives and Expected Outcomes

This course has five major areas of interest:

- A) Cell structure, organization and function
- B) Chemical processes within the cell
- C) Principles of genetics and inheritance: gene structure, function and regulation
- D) Cell communication, early development and pattern formation
- E) The cell cycle, with a look at a loss in cycle control leading to cancer, and the basics of immunology

After completion of Biology 1430, a student will be able to demonstrate understanding of the principles that sustain life at the molecular and cellular levels. This course is specifically aimed at providing a basic but substantially in depth understanding of the relationship between cell structure and function, metabolism, cellular physiology and genetics. A student successfully completing Biology 1430 will have an improved ability to think critically, communicate, and make informed decisions about scientific issues.

## V) Website, Resources & Podcasts of Class Lectures

A significant amount of information related to this class is available on the class TRACS site and the class web page: [www.bio.txstate.edu/~mgreen/1430](http://www.bio.txstate.edu/~mgreen/1430). These sites have a copy of this syllabus (complete with all the assignments and due dates, exams, etc.), as well as numerous links to information pertinent to this class and to biology in general.

Links on the pages will take you to:

- Downloads of weekly classroom handouts
- Slideshows of lecture presentation slides
- Recorded podcasts of the lecture presentations

TRACS is an online course management system where you can track information about all of your classes, interact with other class members, view your grades, etc. Your TRACS login information is the same as for the TXSTATE site.

## VI) Topics Covered – Week By Week

|                    |   |
|--------------------|---|
| 1)<br>1/15 & 1/17  | Course introduction / Introduction & Fundamentals of Biology  |
| 2)<br>1/22 & 1/24  | Cell Structure & Function / Chemical Components of Cells & Reactions<br>TRACS Login Assignment Due (1/24) |
| 3)<br>1/29 & 1/31  | Carbohydrates / Lipids / Nucleic Acids / Proteins<br>Quiz 1 (1/29)  |
| 4)<br>2/5 & 2/7    | Cell Membranes & Transport Across Cell Membranes<br>Quiz 2 (2/5)  |
| 5)<br>2/12 & 2/14  | Photosynthesis<br>Quiz 3 (2/12) / Review Article #1 Due (2/14)  |
| 6)<br>2/19 & 2/21  | Respiration   |
| 7)<br>2/26 & 2/28  | Exam 1 (2/26)<br>Transport of Molecules / The Cytoskeleton / Quiz 4 (2/28) / Review Article #2 Due (2/28) |
| 8)<br>3/4 & 3/6    | Cell-Cell Interactions & Junctions / The Cell Cycle / Mitosis<br>Quiz 5 (3/4)                             |
| 9)<br>3/11 & 3/13  | Spring Break / No Class Meetings  |
| 10)<br>3/18 & 3/20 | Meiosis / Mendelian Genetics<br>Review Article #3 Due (3/13)  |
| 11)<br>3/25 & 3/27 | DNA Replication & Repair  |
| 12)<br>4/1 & 4/3   | DNA to Proteins & How Cells Read Genes<br>Quiz 6 (4/1) / Quiz 7 (4/3) / Review Article #4 Due (4/3)       |
| 13)<br>4/8 & 4/10  | Exam 2 (4/8)<br>Gene Expression / Gene Manipulation / Quiz 8 (4/10)                                       |
| 14)<br>4/15 & 4/17 | Genomics / Chemical Signals & Distant Communication<br>Quiz 9 (4/15) / Review Article #5 Due (4/17)       |
| 15)<br>4/22 & 4/24 | Early Development / Pattern Formation / Immunology<br>Quiz 10 (4/22)                                      |
| 16)<br>5/6         | Exam 3 & Final Exam (comprehensive)<br>11:00 am – 1:30 pm   |

## VII) Text

Our Primary Text for the Course: *Biological Science*, 2<sup>nd</sup> edition, by Scott Freeman  
Suggested Additional Material: *A Short Guide to Writing About Biology*, 6<sup>th</sup> edition by Pechenik.

## VIII) Suggested Weekly Reading

Complete the following reading from Freeman's *Biological Science* **before** each class.

Week 1: Chapters 1.1 – 1.4  
Week 2: Chapters 7.1 & 2.2 – 2.5  
Week 3: Chapters 5.1 – 5.2, 6.1, 4.1 – 4.3 & 3.2 – 3.4  
Week 4: Chapters 6.2 – 6.4  
Week 5: Chapter 10  
Week 6: Chapter 9  
Week 7: Chapter 7.2 – 7.4  
Week 8: Chapters 8.2 & 11  
Week 9: Spring Break  
Week 10: Chapters 12.1 – 12.2 & 13.1 – 13.3  
Week 11: Chapter 14  
Week 12: Chapters 15 & 16.1 – 16.5  
Week 13: Chapters 17.1, 18.1, 18.3 – 18.5, 19.1 – 19.2 & 19.5  
Week 14: Chapters 20.1, 20.3, 20.5, 8.3, 47.3 – 47.4  
Week 15: Chapters 21, 22.1 & 49.2 – 49.4

## IX) Grading Criteria

Student grades will be based on the total number of points accumulated in the following areas:

|   |                   |
|---|-------------------|
| Section Exam .....  | 100 points        |
| Section Exam .....  | 100 points        |
| (The 2 highest section exam grades will be used for calculation of the final average; all three exams must be taken to qualify) |                   |
| Final Exam .....  | 100 points        |
| Quizzes (10 total) .....  | 100 points        |
| Laboratory .....  | <u>200 points</u> |
| Possible Total:   | 600 points        |

Primary Literature Reviews (5 total) ..... 10 points  
(These are extra credit assignments and are added to your final exam grade before averaging)

Attendance ..... +2 (0-1 absences); +1 (2-4 absences)  
(Attendance points are added to your final average)

Grading scale: 100 to 90% = A; 89 to 80% = B; 79 to 70% = C; 69 to 60% = D; 59% and below = F  
The University deadline to drop a course with an automatic 'W' grade is March 20th. PLEASE, email me or speak with me in person if you decide to drop this course.

## X) Assignments for Functional Biology

### 1) Suggested reading assignments:

Suggested reading assignments are listed in section VIII. These assignments will help you prepare for lecture by familiarizing you with the material to be discussed. The following are suggestions for before- and after-class reading of the assignments.

Before-class suggestions:

- A) Read the Key Concepts and Summary.
- B) Read the Main body of the chapter for key words and general concepts.
- C) Familiarize yourself with the illustrations.

After-class suggestions:

- A) Re-read the Key Concepts and Summary.
- B) Re-read the Main body of the chapter for detail.
- C) Review the illustrations for greater understanding.

- D) Listen to the Podcasts for each topic.
- E) Review your notes and make any necessary additions/corrections.

## 2) Primary Literature Review:

Extra credit will be given for primary literature reviews. These extra credit assignments will require you to read a peer-reviewed, scientific article and then submit a summary that addresses a series of questions you are presented with. The articles and their associated questions can be found on our class TRACS site. Each summary will be uploaded to [www.TurnItIn.com](http://www.TurnItIn.com) by the assigned due date. A total of 5 summaries can be submitted with an extra credit point value of 2 points per summary. In order to participate in the extra credit assignments, review article #1 (Benos et al.) must be completed.

## 3) Quizzes:

Ten quizzes will be given during class throughout the semester. See section VI for the dates of each quiz.

## 4) TRACS assignment:

An introductory assignment is located on TRACS. Login to our TRACS site and navigate to the Assignments link. Click this link and then look for an assignment titled 'Introductory Assignment'. Completion of this assignment is mandatory and will add 2 points to your first exam grade if completed or deduct 2 points from your first exam grade if not completed.

## 5) Supplemental Assignments and Quizzes (Pop-quizzes)

Additional assignments and quizzes may be given throughout the semester at the discretion of the instructor. Points earned for these assignments and quizzes will be added onto your exam total before averaging.

# XI) Notes on Higher Education

This is college and is for adults who want to learn. Sometimes it is hard. Sometimes it is fun. Oftentimes, it is both. Most jobs return what you put into them and if you give this course maximum effort, you will learn and earn a high grade.

Classes begin on time, so be in the lecture hall at the scheduled hour. Additionally, each class will contain information pertinent to the assignments and previous, future lectures; each week builds upon information learned the previous weeks. So make the commitment to be here for the lecture meetings or do not take the class. Your job, as a student is to come to class, be attentive, ask questions, keep your mind open to new ideas and fulfill assignments on time. If you do these things, you will be perceived as a serious student. My job is to provide the information you need to be successful in the course, in the best atmosphere that can be created.

In an educational forum, it is best to inform the professor in advance about problems with correct completion of an assignment. When understood and anticipated, contingencies can often be handled easily. As a general rule, all assignments must be completed on time.

Students with special needs (as documented by the Office of Disability Services) should identify themselves at the beginning of the semester. If you are uncertain about your situation, but think you may have a need to be addressed (e.g. text anxiety, dyslexia, medical conditions, etc.) please come talk to me soon (well in advance of your first assignment or exam) so that we can discuss how best for you to succeed in the course. Please note that it is your responsibility to make all alternate test-taking arrangements with the ODS and myself, at least 3 business days prior to each exam.

I expect all students to conform to the Texas State University code of academic honesty. University policies regarding academic dishonesty, including definitions and disciplinary actions, can be found at [http://www.texasstate.edu/academic\\_honesty/](#). In addition to other possible disciplinary actions, students caught in the act of academic dishonesty will automatically receive a 0 on the relevant assignment(s). Students should be aware that representing someone else's work as their own is considered plagiarism, even if the appropriate literature citation is given. Cheating will not be tolerated. Cheating includes, but is by no means restricted to, copying answers from another person's tests or any assignments, looking at another person's tests while taking an exam, and having another person take an exam for you. Attempting to or purchasing another person's assignments and submitting the work as your own, either in exact or modified form is also considered a violation of the Texas State University code of academic honesty. Appropriate discipline will be administered according to University policy. Anonymous allegations of academic dishonesty will not be investigated. Other allegations will be investigated, and the identity of the accuser will be protected to the extent possible. Students should direct questions regarding academic dishonesty to their instructor.

# **DEPARTMENT OF BIOLOGY ADDENDUM TO GENERAL EDUCATION SYLLABI**

## **Texas State University-San Marcos Honor Code**

As members of a community dedicated to learning, inquiry, and creation, the students, faculty, and administration of our University live by the principles in this Honor Code. These principles require all members of this community to be conscientious, respectful, and honest.

### **We Are Conscientious:**

We complete our work on time and make every effort to do it right. We come to class and meetings prepared and are willing to demonstrate it. We hold ourselves to doing what is required, embrace rigor, and shun mediocrity special requests, and excuses.

### **We Are Respectful:**

We act civilly toward one another, and we cooperate with each other. We will strive to create an environment in which people respect and listen to one another, speaking when appropriate, and permitting other people to participate and express their views.

### **We Are Honest:**

We do our own work and are honest with one another in all matters. We understand how various acts of dishonesty, like plagiarizing, falsifying data, and giving or receiving assistance to which one is not entitled, conflict as much with academic achievement as with the values of honesty and integrity.

## **The Pledge for Students**

Students at our University recognize that, to insure honest conduct, more is needed than an expectation of academic honesty, and we therefore adopt the practice of affixing the following pledge of honesty to the work we submit for evaluation:

I pledge to uphold the principles of honesty and responsibility at our University.

## **The Pledge for Faculty and Administration**

Faculty at our University recognize that the students have rights when accused of academic dishonesty and will inform the accused of their rights of appeal laid out in the student handbook and inform them of the process that will take place.

I recognize students' rights and pledge to uphold the principles of honesty and responsibility at our University.

## **Texas State Endorses Wingspread Journal's Seven Principles for Good Practice in Undergraduate Education**

1. Student-faculty contact
2. Cooperation among students
3. Active learning
4. Prompt feedback
5. Time on task
6. High expectations, and
7. Respect for diverse talents and ways of learning