

## **BIO 1510: Basic Life Mechanisms**

### **Lecture Syllabus, Fall 2017**

3 credits without lab — for engineering students only

4 credits with lab — for all other students

0100 General Lectures

11:30 am - 12:20 pm; Mondays, Wednesdays, and Fridays

### **Welcome to Biology 1510!**

In this document, you will find all the information you need regarding the course structure, the content of the course, grading policies, exam dates, and other important information. By registering for the class, you agree to follow all of the policies listed in the syllabus and those that are mandated by the University. Therefore, **I highly recommend you read the syllabus in a great detail.** I look forward to a fun and exciting semester with all of you!

Dr. Turchyn

### **COURSE DESCRIPTION AND OBJECTIVES**

BIO 1510 is the first of two courses in a two-semester sequence of introductory biology for biology and science majors, including science education, pre-allied health, and engineering students. The objective of this course is to understand the structure, metabolism and reproduction of living things from the perspective of the cell. Thus, the course will focus on the role of biochemical and subcellular components including proteins, nucleic acids, and organelles in the nutrition, inheritance and development of plants and animals. The course will also relate these concepts to topical issues such as nutrition, human genetics, and recombinant DNA technology.

### **STUDENT LEARNING OUTCOMES**

Upon successful completion of the course, students should be able to:

1. how inheritance and mutations are critical for **evolution**.
2. how **structures** of molecules, cells and tissues relate to their **functions**.
3. how **information** (genetic, sensory and regulatory) flows within cells (intracellular signaling, and from DNA to RNA to proteins), between cells, and from parents to progeny.
4. how **energy and matter are transformed** in cellular respiration, photosynthesis and respiration.

5. how the components of cells interact as **systems** to generate emergent properties.
6. how **science is based on evidence** and makes predictions.
7. how to interpret biological data **qualitatively, quantitatively, and graphically**.
8. how to express scientific ideas multiple ways and be able to **communicate across disciplines**.
9. how science informs the decisions of a **society** and how science creates opportunities that require informed citizens and policies.

### **COURSE PREREQUISITES**

Students are required to have completed **either** BIO 1050 (Introduction to Life) with a grade of C- or above; **or** a C- or better in BIO 1500 (Basic Life Diversity), **or** have an ACT score of 24 or higher, **or** have a passing score on the Biology placement exam. Students who managed to enroll in this course without satisfying these prerequisites are not likely to succeed in this course and for this reason will be required to drop it. Students who have questions about these prerequisites should see the Biology Department's Undergraduate Advisor, Ms. Kim Walkowiak-Hunter ([kwalk@biology.biosci.wayne.edu](mailto:kwalk@biology.biosci.wayne.edu)) during the first week of class.

### **TEXTBOOK INFORMATION**

**Textbook** – Biology, 11<sup>th</sup> edition, by Raven, Johnson, Mason, Losos, and Singer is available in two forms: hardcover (ISBN: 9781259188138) and loose leaf (ISBN: 9781259668890). Each of them includes the chapters covered in both BIO 1510 and BIO 1500.

**Laboratory Manual** – BIO 1510 by Serreyn (ISBN: 9780738080277).

### **ADD/DROP INFORMATION**

Students can enroll in the class until **September 13<sup>th</sup>**. If a student signs up for the class and decides to drop it before **September 13<sup>th</sup>**, the tuition for the class will be cancelled, the student will be reimbursed, and the class will not show on his/her transcript. If the student drops this course between **September 14<sup>th</sup>** and **September 27<sup>th</sup>**, it will not be shown on the student's transcript, but the tuition will not be reimbursed. If the student drops the class between **September 28<sup>th</sup>** and **November 12<sup>th</sup>**, the tuition will not be reimbursed and a final grade of "WP" (withdrawal with a passing grade, if average of all lecture exam scores earned to date is greater than or equal to 60%), "WF" (withdrawal with a failing grade, if average of all lecture exam scores earned to date is less than 60%), or "WN"

(withdrawal never attended) will be shown on his/her transcript. **Withdrawals must be requested through Academica and they will not be granted after November 12<sup>th</sup>.** If the student signs up for the class, stops attending lectures, and fails to withdraw, he/she will receive a failing grade "F" for the course. **Please note that "incomplete" grades will not be issued to students in poor standing who are seeking an alternative to a late drop.**

### **CODE OF CONDUCT**

Professional behavior is expected in the lecture, which includes respecting your classmates by arriving on time, turning off cell phones, and not talking, texting, surfing internet (facebook, twitter, etc.) or playing any games. If a student is caught performing any of the above during lecture, he/she will be required to leave the room. If a student is caught performing any of the above during an exam, he/she will receive a grade of "F" for the course (see below).

### **CHEATING POLICY**

A student found to be cheating during an exam (using a "cheat sheet" or notes written on a desk, looking at another student's exam, or allowing another student to look at his/her exam) will automatically receive a grade of "F" for the course and may be expelled from the University. For discussions of cheating and plagiarism see the "Student Code of Conduct" that can be found at <http://www.doso.wayne.edu/judicial/index.htm>

### **OFFICE HOURS AND COMMUNICATION**

**Any questions/comments regarding the lecture** portion of the course should be directed to:

Dr. Nataliya Turchyn

**Office Location:** Room 3119, Biological Sciences Building

**E-mail:** [ai7380@wayne.edu](mailto:ai7380@wayne.edu)

**Office Phone:** 313-577-2910

**Office Hours:** 12:30 pm - 2:00 pm on Mondays & Wednesdays or by appointment

If you have a question about the lecture/textbook material, please post your question on the

**Discussion Board** associated with the course Blackboard website: <https://blackboard.wayne.edu>

I will not reply to e-mails when the answer can be found in the syllabus or on Blackboard. In addition, I will not reply to e-mail questions that have already been answered on the **Blackboard Discussion Board**.

If you would like to make an appointment to meet with me, please contact me through e-mail or in person after lecture.

If you have a question about your lecture grade, please send me an e-mail containing the scores you have in your records and I will check them with my records.

**Any questions regarding the lab** portion of the course should be directed to a student's lab teaching assistant (TA) or Ms. Michelle Serreyn, Room 2012 Science Hall, e-mail: [ac3042@wayne.edu](mailto:ac3042@wayne.edu)

When e-mailing me, Ms. Serreyn, or TA, please use professional style with your course number in the subject, a proper greeting (e.g., "Dr. Turchyn, Ms. Serreyn, or Ms/Mr/Mrs. Teaching assistant"), and correct punctuation including capitalization and no texting abbreviations. E-mails that do not follow these rules may take longer to get a reply or may be returned for correction.

The course has also been assigned a **student supplemental instructor (SI) — Hanan Rakine** ([fv3732@wayne.edu](mailto:fv3732@wayne.edu)). Hanan will help students organize classroom materials and notes, and develop effective study strategies. She has already taken this course, and organizes and holds her own study sessions with students. You are encouraged to approach Hanan with questions about the lecture material as you would your instructor.

### INFORMATION ABOUT EXAMS

**There will be four exams given during the semester and one final, cumulative exam (five exams total).** Each semester exam will be worth 125 points and consist of 40 multiple choice and true/false questions. The final cumulative exam, however, will be worth 250 points and consist of 80 multiple choice and true/false questions. **All exams are closed book and are related to the material covered in the lecture, study guides, and assigned in reading of the textbook.**

**Every student must take the final exam and it cannot be dropped.** If the percentage of your final exam score is higher than the percentage of your lowest semester exam score, your lowest semester exam score will be replaced.

For example, if you score on exam #2 87.5 out of 125 points, then your exam #2 would be 70% ( $87.5/125 \times 100\%$ ). If you score on the final exam 200 out of 250 points, then your final percentage would be 80% ( $200/250 \times 100\%$ ). Your exam #2 score would be recalculated using

the 80% you received on the final exam and your new exam #2 score would be 100 points (80/100 x 125 points).

**YOU MUST BRING YOUR STUDENT ID (ONECARD) TO EVERY EXAM!** Scantrons are provided at the exams. Each semester exam begins promptly at 11:30 am and ends at 12:20 pm. **The FINAL EXAM is scheduled for MONDAY, DECEMBER 18<sup>th</sup> at 10:15 AM - 12:15 PM.** All exams are held in 0100 General Lectures. **There are no make-up exams. If a student misses a semester exam for any reason, the percentage the student receives on the final exam will be used as the percentage for the missed exam.**

For example, if you score on the final exam 225 out of 250 points, then your percentage on the final exam would be 90% (225/250 x 100%). So, if you missed exam #2 for any reason, your percentage on exam #2 would be 90%, which is 112.5 points (90/100 x 125 points).

The final exam is scheduled as designated in the Schedule of Classes for this term. No other time for the final exam will be available, and no exception will be made for conflicts such as student travel plans or other exams the same day. Students arriving late to an exam will NOT be given extra time. Students will not be able to leave and re-enter the room once the exam begins for any reason (including bathroom breaks). No students will be allowed to enter and take an exam after one student has finished an exam and left the exam room. **Students who arrive after another student has left will receive a zero for their exam score.**

If more than 75% of the class answers an exam question incorrectly, everyone will receive credit for that question.

### **CALCULATING GRADES**

If you are taking the 3-credit lecture only section of the course, the total points possible for the course are 750 points. If you are taking the 4-credit section that includes the lecture and lab, the total points possible are 1000 points (750 points from lecture + 250 points from lab). **The final scores in the lecture are calculated using scores from the five exams. There is absolutely no opportunity for extra credit or alternate assignments under any circumstances.** All exam scores will be posted in the Grade Center on Blackboard. **Exams will not be given in advance.**

It is the student's responsibility to keep track of his/her scores. You can fill in the blank lines below to keep track of your scores.

|            |                    |
|------------|--------------------|
| Exam I     | _____ (out of 125) |
| Exam II    | _____ (out of 125) |
| Exam III   | _____ (out of 125) |
| Exam IV    | _____ (out of 125) |
| Final Exam | _____ (out of 250) |

If you are taking the 3-credit lecture only section, add all the scores above, divide by 750, then multiply by 100 to determine your final percentage.

If you are taking the 4-credit section, add all the scores above to the total score from your lab (out of 250), divide by 1000, then multiply by 100 to determine your final percentage.

**Final grades are assigned based on the following percentage:**

|    |              |    |              |
|----|--------------|----|--------------|
| A  | 93.5 - 100%  | C  | 72.5 - 75.4% |
| A- | 89.5 - 93.4% | C- | 69.5- 72.4%  |
| B+ | 85.5 -89.4%  | D+ | 65.5 - 69.4% |
| B  | 82.5 -85.4%  | D  | 62.5 - 65.4% |
| B- | 79.5 - 82.4% | D- | 59.5 - 62.4% |
| C+ | 75.5 - 79.4% | F  | ≤ 59.4%      |

#### **GRADE DISPUTES**

Students will have one (1) week after the return of an exam to challenge a grade for any question. Failure to challenge the grade within this period indicates a willingness to accept the grade as is. The challenge should consist of a written description of why the answer is correct based on other published material that you cite. It is not an opportunity to complain. Be advised that an exam challenge constitutes an entire re-grade of your exam.

#### **UNEXPECTED UNIVERSITY CLOSURES**

If the University is officially closed on an exam day, the exam will be held on the next regularly

scheduled class day. Closure of the University is announced by the following mechanisms:

- The University Newsline (313) 577-5345\*
- WSU Homepage ([www.wayne.edu](http://www.wayne.edu))\*
- WSU Pipeline ([www.pipeline.wayne.edu](http://www.pipeline.wayne.edu))\*
- WDET-FM (Public Radio 101.9) and
- By other local radio and television stations.

\* Note: The information on closures and class cancellations is likely to be found at these locations before local radio and television stations broadcast it.

### EXAM TIME CONFLICTS

Students are not required to take more than two exams in one day. A student with more than two scheduled final exams on one day may (not must) contact the instructor of the course with the lowest number students enrolled, to arrange an alternate time for the final exam. Such petitions must be made at least one week prior to the scheduled date of the exam. Our class has 370 students.

### RELIGIOUS HOLIDAY CONFLICTS

Students who have a conflict with any of the scheduled exam times due to religious reasons must notify Dr. Turchyn in writing by class time on **Monday, September 11<sup>th</sup>**. **Accommodations will not be provided unless she is notified in writing by this date.**

### STUDENTS WITH DISABILITIES

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TTY: telecommunication device for the deaf; phone for hearing impaired students only). Once you have your accommodations in place, we will be glad to meet with you privately during office hours to discuss your special needs. Please refer to the SDS website for further information about students with disabilities and the services we provide for faculty and students:

<http://studentdisability.wayne.edu/>

## SCHEDULE OF LECTURES AND EXAMS

Here is the schedule with dates of all the exams and a tentative schedule indicating which chapter(s) will be covered each class day. Note that some chapters may take more or less time than indicated on the schedule below.

| <b>Date</b>  | <b>Topic</b>                                | <b>Chapter(s)</b> |
|--------------|---|-------------------|
| 8/30         | Course introduction                         |                   |
| 9/1          | Nature of molecules and properties of water | 2                 |
| <b>9/4</b>   | <b>NO CLASS — LABOR DAY</b>                 |                   |
| 9/6          | Nature of molecules and properties of water | 2                 |
| 9/8          | Nature of molecules and properties of water | 2                 |
| 9/8          | Chemical building blocks                    | 3                 |
| 9/11         | Chemical building blocks                    | 3                 |
| 9/13         | Chemical building blocks                    | 3                 |
| 9/15         | Cell structure                              | 4                 |
| 9/18         | Cell structure                              | 4                 |
| 9/20         | Cell structure                              | 4                 |
| 9/20         | Membranes                                   | 5                 |
| 9/22         | Membranes                                   | 5                 |
| <b>9/25</b>  | <b>Exam #1</b>                              | <b>2-5</b>        |
| 9/27         | Energy and metabolism                       | 6                 |
| 9/29         | Energy and metabolism                       | 6                 |
| 9/29         | How cells harvest energy                    | 7                 |
| 10/2         | How cells harvest energy                    | 7                 |
| 10/4         | How cells harvest energy                    | 7                 |
| 10/6         | Photosynthesis                              | 8                 |
| 10/9         | Photosynthesis                              | 8                 |
| 10/11        | Photosynthesis                              | 8                 |
| 10/13        | Cell communication                          | 9                 |
| 10/16        | Cell communication                          | 9                 |
| <b>10/18</b> | <b>Exam #2</b>                              | <b>6-9</b>        |
| 10/20        | How cells divide                            | 10                |



| <b>Date</b>        | <b>Topic</b>                          | <b>Chapter(s)</b> |
|--------------------|---------------------------------------|-------------------|
| 10/23              | How cells divide                      | 10                |
| 10/25              | How cells divide                      | 10                |
| 10/25              | Sexual reproduction and meiosis       | 11                |
| 10/27              | Sexual reproduction and meiosis       | 11                |
| 10/30              | Patterns of inheritance               | 12                |
| 11/1               | Pattern of inheritance                | 12                |
| 11/3               | Patterns of inheritance               | 12                |
| 11/3               | Chromosomes, mapping, and the meiosis | 13                |
| 11/6               | Chromosomes, mapping, and the meiosis | 13                |
| 11/8               | Chromosomes, mapping, and the meiosis | 13                |
| 11/8               | DNA: the genetic material             | 14                |
| <b>11/10</b>       | <b>Exam #3</b>                        | <b>10-13</b>      |
| 11/13              | DNA: the genetic material             | 14                |
| 11/15              | DNA: the genetic material             | 14                |
| 11/17              | Genes and how they work               | 15                |
| 11/20              | Genes and how they work               | 15                |
| <b>11/22-11/24</b> | <b>NO CLASS - THANKSGIVING</b>        |                   |
| 11/27              | Genes and how they work               | 15                |
| 11/29              | Control of gene expression            | 16                |
| 12/1               | Control of gene expression            | 16                |
| 12/4               | Control of gene expression            | 16                |
| 12/4               | Biotechnology                         | 17                |
| <b>12/6</b>        | <b>Exam #4</b>                        | <b>14-16</b>      |
| 12/8               | Biotechnology                         | 17                |
| 12/11              | Biotechnology                         | 17                |
| <b>12/18</b>       | <b>Final Exam</b>                     | <b>2-17</b>       |