## Quinnipiac University Department of Biological Sciences BIO 150 Fall 2019 Common Lecture Course Syllabus

## MWF

## Class attendance is mandatory

**All students must be simultaneously registered for a BIO 150 (Majors) Laboratory All students must attend the classes for which they are duly registered**

Bio150 General Biology Lecture and Bio150L Lab (3/1 cr.) Bio150: Students will develop sound learning strategies and introductory knowledge within five core concepts in biology: evolution, structure and function relationships, the flow, exchange and storage of information, major pathways and transformations of energy and matter, as well as living systems as interactive and interconnected. Bio150L: Students will take an investigative/inquiry-based approach and become competent within the process of science including experimental design, analysis, as well as scientific communication and collaboration. This is the first course of a three-course sequence for biology and related majors. Every year, Fall.

## Required Textbooks

Knisely, Karin. 2017. A Student Handbook for Writing in Biology,5th Ed. Sunderland: Sinauer Associates, Inc. 288pp.

Mastering Biology Online Study System. San Francisco (CA): Pearson Benjamin Cummings Publishers

ISBN for modified mastering standalone access code with \*\*eBook 10/e: 9780321939050

\*\*Reece, J. B., Urry, L. A., Cain, M. L., Wasserman, S. A., Minorsky, P. V., Jackson, R. B.. 2014 Campbell Biology, 10th edition. San Francisco (CA): Pearson Benjamin Cummings Publishers

\*\*eBook is included Mastering Biology. The hard copy of the textbook is optional, but not required.

## Lecture Objectives and Core Competencies

**Science as a Way of Knowing** To help students to understand major epistemological considerations, e.g., How is science different from other kinds of inquiry, e.g., like faith or other philosophical disciplines? What is the Criterion of Demarcation? What is a hypothesis? What distinguishes treatments and controls? What does the asymmetry of proof and disproof refer to and why is this issue important to understanding what scientific theories are. What are the three hallmarks of a scientific investigation?

**Atoms, Bonds and Molecules** Why do atoms interact and form bonds? What kinds of bonds are common in biological systems and what characteristics do they have?

**Macromolecules: their Chemistry and Biology** What are the four major kinds of organic molecules, their structural features, and functional roles in biological systems? What kinds of bonds are critical to the functioning of each kind of macromolecule? What are the structural features of nucleic acids and proteins that enable reproduction, information storage, mutation, and catalysis?

**Energy, Enzymes and Catalysis** What is catalysis and how is it regulated in biological systems? What are the structural features of biological catalysts that enable them to work with lock-and-key specificity? What are the typical energetics of a catalyzed reaction? What ultimately determines the timing and structure of the various catalysts?

**Prokaryotes and Eukaryotes** What are the structural and functional differences between prokaryotes and eukaryotes?

**Cell Communication** How do membranes work? How is transport across membranes regulated? What are the components of the endomembrane system and how do they interact? How did the double membranes of the nucleus, mitochondria, and chloroplasts originate - what are the contending hypotheses and evidence?

**Respiration and Photosynthesis** How is energy captured and converted to various chemical forms in photosynthesis and respiration? How do photosynthesis and respiration work as biochemical systems, including major inputs and outputs? What is chemiosmosis and how does it function, in both photosynthesis and respiration, and how are membranes and their proteins involved in this work?

**Anatomy and Physiology** How are vertebrate systems organized? What are the major organs in a vertebrate system? How do these major organs function for homeostasis? What are the cellular components that control the function of cells, tissues and organs in an organ system?

**Methods of Evaluation**

The course grade will be computed asa weighted average of the two components described below:

* Final score for BIO 150      75% of course grade
* Final score for BIO 150L    25% of course

Students receive the same grade for BIO 150 and BIO 150L.

If a student fails to meet the minimum grade requirement in BIO 150/L for their major program, or for progression to another class, they will need to retake BOTH BIO 150 lecture and laboratory.

1. A single, final course grade will be submitted for Bio150 Lecture (75%) and Bio150L Lab (25%). A minimum final course grade of C- in Bio150/L is required to progress to BIO151/L.
2. A final examination will be given at a time determined by the Registrar’s Office during final exam week (December 9 -14, 2019).
3. Letter grades will be assigned based upon correlation of the course numeric average with the grading scale published in the Quinnipiac University Catalog.

## GRADE SCALE

(A) 100-93; (A-) 92-90; (B+) 89-87; (B) 86-83; (B-) 82-80; (C+) 79-77; (C) 76-73; (C-) 72-70; (D)

69-60; (F) 59-0

## Grades (individual or averaged) will not be curved or scaled, and no extra-credit opportunities will be offered or provided.

1. If you miss an examination, you are required to contact the instructor **on the day of the exam**. Students missing a scheduled examination will require appropriate documentation verifying the absence. Students **may** be offered a make-up examination **ONLY AFTER** the instructor has approved the documentation. Acceptable reasons for missing an examination include: documented medical absences, sanctioned University athletic competition and religious holidays. All other absences will result in a grade of zero for that examination. If deemed appropriate, make-up examinations will be administered at a time determined by the instructor. **Note that the Quinnipiac University Health Center does not provide written documentation.**
2. Student athletes must notify the instructor at least 1 week in advance of any absences related to athletic events. All absences due to athletic events will be verified with the Athletic Department. Practice is not an acceptable reason for missing class or an examination.

**Due dates for assignments are listed on the syllabus. Students handing in assignments one lab period late will receive a 10% reduction of their grade for that assignment. Assignments turned in later than one class lab period are not accepted, and students receive a “0” for that assignment**.

Students are responsible for all the material in missed lectures, plus any supplemental material on the Blackboard system.

1. **November 1, 2019** Last day to withdraw from undergraduate classes with a grade of “W”:
2. **Thanksgiving Recess** Thanksgiving recess is scheduled from November 25 - 30, 2019. Do not plan an early departure or a late return. Faculty are not obligated nor expected to accommodate your schedule

# Lecture Evaluation

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| **Unit** | **Meeting Dates** | **Exam Date** | **Exam Value** |
| One | August 26 – September 18 | September 20, 2019 | 17.5% |
| Two | September 23 – October 16 | October 18, 2019 | 17.5% |
| Three | October 21 – November 6 | November 8, 2019 | 17.5% |
| Four | November 11 – December 6 | Final Exam Week\* December 9-14 | 17.5% |
| Assignments | Throughout FA19 semester |  | 30% |

\*Determined by the Registrar’s Office Total: 100%**\*\***

**Lecture Examinations (70%)**

The majority of the lecture exams and final lecture exam will be objective (may be multiple choice, matching, true/false, fill-in-the-blank), and the remaining parts of the exams will be subjective (e.g. short answer and/or essay). Exam grades will be posted to Blackboard. Students may review exams during individual faculty office hours. The Final exam will be given only during finals week as scheduled by Quinnipiac University, and it is NOT cumulative.

## Lecture Assignments (30%)

Assignments may be in the form of electronic portfolio creation and use (e-portfolio), research papers, group video projects, blogs, WIKI, discussion boards, homework questions, in-class problem solving activities, problem-based learning group/individual assignments, etc. Some assignments will be completed as a group, with each member contributing equally, and therefore receive a group grade. Individual instructors will provide guidelines, due dates and information about these assignments.

## Semester Calendar

(M) August 26 First Day of Undergraduate Classes

(M) September 2 No Classes – Labor Day

(W) October 9 No Classes – Yom Kippur

1. November 1 Last Day to withdraw from a course with a “W”

## Attendance Policy:

Attendance is mandatory.

Attendance will be taken each class AND at each power hour session. Students will sign an attendance sheet that will be passed through the class and collected by the instructor. **Students signing for other students that that are absent are considered to have violated the Academic Integrity Policy.**

Each student is allowed a maximum of four (4) unexcused absences. Absence from a single lecture or power hour session is considered to be one absence. Three consecutive unexcused absences are reported to the Associate Dean of Student Affairs. Excused absences are documented medical absences, sanctioned University athletic competition and religious holidays*.* All other absences are considered unexcused and your attendance for that class period will be marked as such.

Closure of the University due to inclement weather does not count as an absence. If however, the University is officially open and the instructor has not cancelled class via email, you are expected to be in class. If you miss a day because you choose not to drive due to inclement weather, it will be counted as an unexcused absence.

Each unexcused absence beyond the four that are allowed will result in a reduction of the final numerical grade in the course by one point.

Examples with a student who has earned a final numerical course grade of 83% (B).

* + A student with a total of 4 unexcused absences will receive a final numerical course grade of 83% (B).
  + A student with a total of 5 unexcused absences will be penalized 1 point and receive a final numerical course grade of 82 (B-).
  + A student a total of 8 unexcused absences will be penalized 4 points and receive a final numerical course grade of 79% (C+).

**Office of Student Accessibility (OSA)**

*Quinnipiac University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with me.*

*If you have a disability, or think you may have a disability, you may also want to meet with the Office of Student Accessibility, to begin this conversation or to request reasonable accommodations. Quinnipiac University complies with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973.*

*Please contact the Office of Student Accessibility by emailing*[*access@qu.edu*](mailto:access@qu.edu)*, or by calling* *(203) 582–7600.  If you have already been approved for accommodations through the Office of Student Accessibility, please meet with me so we can develop an implementation plan together.*

The reading assignments listed below should be reviewed prior to lecture. Be advised that all the material covered in your reading assignments may not be reviewed in class. Similarly, all the material presented during lecture may not be contained in your text

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| **Week** | **Major Topic** | **Topic Areas** | **Text Chapter: Pages** |
| **Week 1** | Unit 1: Science as a | *In-class problem-solving activity: Mystery boxes* | Ch. 1: 16-21 |
| **8/26 M** | Way of | Intro to How a Scientist Thinks, How to Study in |  |
| **8/28 W**  **8/30 F\*** | Knowing/Chemistry of Life | Biology, the Scientific Method  *In-class Discussion of Scientific Writing – The* | As indicated by |
| *Research Journal Article* | instructor |
| **Week 2**  **9/2 M**  *Labor Day No Classes*  **9/4 W**  **9/6 F** | Unit 1: Science as a Way of Knowing/Chemistry of Life | Biological Organization, Homeostasis/Feedback Mechanisms  Diversity of Life | Ch. 40: 867-877  Ch. 1: 1-9 |
| **Week 3**  **9/9 M**  **9/11 W**  **9/13 F** | Unit 1: Science as a Way of Knowing/Chemistry of Life | Atoms, Molecules  Chemical bonds and reactions Properties of Water  Organic Molecules | Ch. 2: all  Ch. 3: all  Ch. 4: 56-62 |
| **Week 4** | Unit 1: Science as a | Chemical Groups Monomers and Polymers | Ch. 4: 63-64  Ch. 5: all |
| **9/16 M** | Way of | Carbohydrates, Lipids, Proteins, Nucleic Acids |
| **9/18 W** | Knowing/Chemistry of Life |  |
| **9/20 F** | Exam 1 | **Exam 1 (Unit 1)** |
| **Week 5**  **9/23 M**  **9/25 W**  **9/27 F** | Unit 2: Cells and Cellular  Processes | Prokaryotes, Eukaryotes  Cellular Organelles/Function  Biological Membrane Structure and Function  Transport of Biological Molecules | Ch. 6: 97 – end  Ch 7: all  ***Hmwk for PBL 1****:*  *(as indicated by instructor)* |
| **Week 6** | Unit 2: Cells and | ***PBL 1*** | ***Hmwk*** |
| **9/30 M**  **10/2 W**  **10/4 F** | Cellular Processes | *Prepare PBL discussion*  *Prepare for in-class discussion* |
| **Week 7** | Unit 2: Cells and |  | Ch. 8: all |
| **10/7 M**  **10/9 W**  *Yom Kippur, no classes*  **10/11 F** | Cellular Processes | Metabolism and Thermodynamics |
| Exergonic/Endergonic Reactions/ATP |

# Course Schedule General Biology 150 Fall 2019

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| **Week 8** | Unit 2: Cells and | Properties of Enzymes | Ch 8: all  ***Hmwk for PBL 2:*** |
| **10/14 M** | Cellular Processes |  |  |
| **10/16 W** |  |  |
| **10/18 F** | **Exam 2 (Unit 2)** |
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| **Week 9** | Unit 3: |  | Ch. 9: 162 – 176 |
| **10/21 M** | Transformation of | Cellular Respiration |  |
| **10/23 W\*\***  **10/25 F** | Energy |  | ***Hmwk for PBL2***  As indicated by instructor |
| **Week 10 10/28 M**  **10/30 W**  **11/1 F\*\*\*** | Unit 3: Transformation of Energy | ***PBL 2*** | ***Hmwk for PBL 2***  Prepare for group work & class discussion |
| **Week 11** | Unit 3: | Fermentation/Anaerobic Respiration | Ch. 9: 177 – 182 |
| **11/4 M** | Transformation of | Photosynthesis | Ch. 10: all |
| **11/6 W** | Energy |  |
| **11/8 F** | **Exam 3 (Unit 3)** |
| **Week 12** | Unit 4: Anatomy & Physiology | Cardiovascular and Respiratory system  Renal System | Ch. 42: 915-922; 928- 938 |
| **11/11 M** |
| **11/13 W** | Ch. 44: 980-985 |
| **11/15 F** |
| **Week 13**  **11/18 M**  **11/20 W**  **11/22 F** | Unit 4: Anatomy & Physiology | Endocrine system   * Osmoregulation * Reproduction | Ch. 44: 988-990  Ch. 46: 1019-1027 |
| **Week 14 11/25-29** | NO CLASSES | THANKSGIVING RECESS |  |
| **Week 15**  **12/2 M** | Unit 4: Anatomy & Physiology | Nervous system  **Exam 4 (Unit 4)** Finals Week 12/9-12/14) | Ch. 48: 1061-1070  Ch. 49: 1082-1084 |
| **12/4W**  **12/6 F** |
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\* Last day of add/drop Aug 30

\*\* Midterm grades are due Oct 23

\*\*\* Last day to withdraw from the course with a grade of “W” Nov 1