**Quinnipiac University Department of Biological Sciences**

**BIO 151 Spring 2020 Common Lecture Course Syllabus**

**MWF**

**Class attendance is mandatory**

**All students must be simultaneously registered for a BIO 151 (Majors) Laboratory**

**All students must attend the classes for which they are duly registered**

BIO151 Lecture: Students will investigate key concepts in molecular and cell biology and genetics, including the chemistry of life, central dogma, molecular genetics, regulation of gene expression, cell structure and physiology at the molecular and microscopic level, cell communication and cell cycle. BIO151 Lab: Selected projects will develop skills in experimental design through an investigative/inquiry-based approach, data analysis and scientific writing. Prerequisite: Successful completion of BIO150 and BIO150L with a grade of C- or better. This is the second course of a three-course sequence for biology and related majors. Every year, Spring.

**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**

**Gene Expression**

How do the molecular structures of DNA, RNA, and protein enable expression of the same information in the three different kinds of molecules? What is the genetic code and how was it elucidated? What are the roles of ribosomes, tRNA, rRNA, and mRNA in protein synthesis? What major kinds of regulation of gene expression are exhibited in prokaryotes? How is this system more complicated in the multicellular eukaryotic descendants of prokaryotes?

**Cell Communication**

How do cells receive and interpret information from their surrounding environment? How do cells communicate with one another? What are the major signaling pathways in eukaryotic cells and how do they influence cell behavior? What are the apoptotic pathways and what signals trigger them? What is the cell cycle? How do cyclin and cyclin-dependent kinases influence cell cycles? How does loss of cell cycle control lead to cancer? What are viruses and how do they replicate?

**Genetics**

What are the fundamental processes of meiosis? How are the traits of parents transmitted to their offspring? How is genetic variation produced and the evolutionary importance of this variation? What two laws of inheritance did Gregor Mendel discover using a scientific approach? What is the importance of Morgan’s discovery and how does it apply to patterns of inheritance? How do alterations of chromosome number or structure result in a genetic disorder? What are non-Mendelian patterns of inheritance?

**Evolution** What is the central dogma of biology and how does it relate to the biological capabilities of the hereditary molecule, to the very existence and nature of evolution? What are the key concepts of Darwin’s Theory of evolution? What is the biological species concept? How does natural selection influence adaptive evolution? What roles do genetic drift and gene flow have in natural selection? How has life evolved?

**Methods of Evaluation**

1. A single, final course grade will be submitted for BIO151 Lecture (75%) and BIO151L Lab (25%). A minimum final course grade of C- in Bio151 is required to progress to Bio152/L or Bio211/L.
2. A final examination will be given at a time determined by the Registrar’s Office during final exam week (May 4-9, 2020).
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

1. **Grades (individual or averaged) will not be curved or scaled, and no extra-credit opportunities will be offered or provided.**
2. Students handing in assignments late will receive a 10% reduction of their grade for that assignment. Assignments turned in later than one week will not be accepted, and students receive a “0” for that assignment.
3. 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.**
4. 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.

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

1. **March 26, 2020** Last day to withdraw from undergraduate classes with a grade of “W”:
2. **Spring Recess** Spring recess is scheduled from March 9–14, 2020. Do not plan an early departure or a late return. Faculty are not obligated nor expected to accommodate your schedule

**Lecture Evaluation**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit** | **Meeting Dates** | **Exam Date** | **Exam Value** |
| One | Jan 22 – Feb 5 | Feb 7, 2020 | 17.5% |
| Two | Feb 10 – Mar 4 | Mar 6, 2020 | 17.5% |
| Three | Mar 16 – Apr 8 | April 13, 2020 | 17.5% |
| Four | Apr 15 – May 1 | Final Exam Week\*  May 4 – 9, 2020 | 17.5% |
| PBLs | Week 4  Week 10 |  | 10% each  8% groupwork,  2% individual reflection |
| Assignments |  |  | 10% |

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

**\*\*Total of assignments and exams above will contribute to 75% of your final course grade for BIO151. The other 25% of the final course grade will be contributed from the BIO151 Lab portion of the course.**

**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 research papers, group 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**

(T) January 21 First Day of Undergraduate Classes

(M) January 27 Last day for late registration or schedule changes

(M-F) March 9 -14 No Classes Spring Recess

(Th) March 26 Last Day to withdraw from a course with a “W”

(F) April 10 Good Friday-University holiday; no classes

(Sa) May 2 Last day of undergraduate courses

(M-Sa) May 4 – 9 Final Exam week

**Attendance Policy**

Attendance is mandatory. Attendance will be taken each class. 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 is considered to be one absence.  Two consecutive unexcused absences are reported to the Associate Dean of Student Affairs. Excused absences must have documentation and approval from your Professor. Excused absences also include 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 up to four unexcused absences will not be penalized and will receive a final numerical course grade of 83% (B).
* A student with a total of six unexcused absences will be penalized 1 point and receive a final numerical course grade of 81% (B-).
* A student a total of eight unexcused absences will be penalized 4 points and receive a final numerical course grade of 79% (C+)

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

**BIO151 Tentative Lecture Course Schedule**

**(Subject to Change)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Major Topic** | **Topic Area** | **Text Chapter** |
|  |  |  |  |
| Week 1  1/22W  1/24 F | Unit 1: Gene Expression | Syllabus and Course Policies  History of Life  DNA is the Genetic Material | Ch. 25.1: 519-522  Ch. 16.1: 312-318 |
| Week 2  1/27 M\*  1/29 W  1/31 F | Unit 1: Gene Expression | Transcription and Translation  Regulation of gene expression: Operons | Ch. 17: 336-end     Ch 18.1: 360-364 |
| Week 3  2/3 M  2/5W  2/7 F | Unit 1: Gene Expression | Eukaryotic gene expression    **Unit 1 Exam** | Ch. 18.2: 364-373 |
| Week 4  2/10 M  2/12 W  2/14 F | Unit 2: Cell Communication | **PBL #1** (Mon/Wed)    The cell cycle  DNA replication | PBL as indicated by instructor  Ch. 12 (all)  Ch 16.2,16.3: 318-330 |
| Week 5  2/17 M  2/19 W  2/21 F | Unit 2: Cell Communication | DNA replication (cont)    Cell signaling, reception | Ch 16.2,16.3: 318-330  Ch. 11.1, 11.2: 210-218 |
| Week 6  2/24 M  2/26 W  2/28  F | Unit 2: Cell Communication | Cellular response, apoptosis  Muscle signaling  Cancer and cell cycle control | Ch 11.3 and 11.4:  218-229  Ch 50:1119-1123  Ch. 18.5: 383-end |
| Week 7  3/2 M  3/4 W  3/6 F | Unit 2: Cell Communication | Innate and adaptive immune responses    **Unit 2 Exam** | Ch. 43: 946-963 |
| Week 8  3/9-14 | **NO CLASSES** | **SPRING RECESS** |  |
| Week 9  3/16 M  3/18 W\*\*  3/20 F | Unit 3: Genetics | Meiosis  Mendelian Genetics | Ch. 13 (all)  Ch. 14.1 and 14.2:  267-276 |
| Week10  3/23 M  3/25 W\*\*\*  3/27 F | Unit 3: Genetics | **PBL 2** (genetics) | PBL as indicated by instructor |
| Week 11  3/30 M  4/1 W  4/3 F | Unit 3: Genetics | Incomplete Dominance, Codominance, Epigenetics  Sex-Linked Traits, | Ch. 14.3 and 14.4:  276-288 |
| Week 12  4/6 M  4/8 W  4/10 F | Unit 3: Genetics | Chromosomal Inheritance  **University Holiday-Good Friday** | Ch. 15 (all) |
| Week 13  4/13 M  4/15 W  4/17 F | Unit 4: Evolution | **Exam 3**  Darwinian evolution | Ch 22: (all) |
| Week 14  4/20 M  4/22 W  4/24 F | Unit 4: Evolution | Evolution of Populations  Viruses | Ch. 23: (all)  Ch. 19: (all) |
| Week 15  4/27 M  4/29 W  5/1 F | Unit 4: Evolution | Biological Species Concept Phylogeny/Lineages | Ch. 24: (all)    Ch. 26: (all) |

\*Add/drop period ends

\*\*Midterm grades due

\*\*\*Last day to withdraw with a grade of “W” March 26