Biology 312  
Cell and Molecular Biology  
SPRING SEMESTER 2019

3 Credits  
Instructors: Tanya Miura and Scott Grieshaber

Tanya Miura  
Office: Room 146 Life Sciences Building  
Office Hours: TBA after spring break

Scott Grieshaber  
Office: Room: 133 Gibb Hall  
Office Hours: 8:30-9:30 WM

Lecture: MWF 9:30-10:20; Janssen Engineering Bldg room 104

Suggested Textbook:  
Cell and Molecular Biology (>=7th edition) by Gerald Karp

Tips for success in class:  
Attend class! Bring a copy of the notes and annotate them as we go. The note set often includes extra material that can be helpful but is not necessarily core material. Posted note sets might change slightly, in which case we will note this on BB learn. Attending class will help you to sort this out and prevent you from getting overwhelmed with content. Read the text or use online resources and our office hours to help understand material that you are struggling with.

Posted in class sessions: Class sessions will be posted before class each day. Some sessions will be updated right before class to correct or add content and this revised content will be posted as well and marked accordingly.

LECTURE OUTLINE

Part I Building and Fueling a Cell  
Jan 09 Introduction / Chapter 1 / TM & SG  
11 Macromolecules / Chapter 2 / SG

14 Energetics / Chapter 3 / SG  
16 Membrane structure / Chapter 4 / SG  
18 Membrane function / Chapter 4 / SG

21 MLK Day No class
23 Mitochondria: structure and TCA cycle / Chapter 5 / SG  
25 Mitochondria: electron transport and ATP synthesis / Chapter 5 / SG
Part II Information Processing in the Cell

Feb
- 01 DNA structure and chromatin / Chapters 10 & 12 / SG
- 04 Review Exam 1
- 06 Exam 1 (covers lecture and readings through February 04)
- 08 Transcription / Chapter 11 / SG
- 11 mRNA processing / Chapter 11 / SG
- 13 rRNA and tRNA processing / Chapter 11 / SG
- 15 Translation / Chapter 11 / SG

Feb 18 President's Day No class
Feb 20 Cell cycle: DNA replication / Chapter 13 / SG
Feb 22 Class canceled for Jazz fest

Mar
- 25 Cell cycle: DNA repair / Chapter 13 / SG
- 27 Cell cycle: control / Chapter 14 / SG
- 01 Cell cycle: mitosis, cytokinesis / Chapter 14 / SG
- 04 Cell cycle: meiosis / Chapter 14 / SG
- 06 Review Exam 2
- 08 Exam 2 (covers lecture and readings through March 06)

Mar 11-15 Spring Break No Class

Part III Regulation and Cell Specialization

Mar 18 Regulation of gene expression: transcription factors / Chapter 12 / TM
- 20 Regulation of gene expression: chromatin remodeling / Chapter 12 / TM
- 22 Regulation of gene expression: translation / post-translation / Chapter 12 / TM
- 25 Cell environment: extracellular matrix / Chapter 7 / TM
- 27 Cell environment: cell adhesion and junctions / Chapter 7 / TM
- 29 Membrane systems: smooth and rough endoplasmic reticulum / Chapter 8 / TM

Apr 01 Membrane systems: Golgi complex; / Chapter 8 / TM
- 03 Membrane systems: endo / exocytosis /lysosomes / Chapter 8 / TM
- 05 Cytoskeleton: microtubules / Chapter 9 / TM
- 08 Review for exam 3
- 10 Exam 3 (covers lecture and readings through April 8)

Part IV Cellular Movement and Communication

Apr 12 Cytoskeleton: cilia, flagella, and motility / Chapter 9 / TM
- 15 Cytoskeleton: intermediate filaments, microfilaments / Chapter 9 / TM
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>May 17</td>
<td>Cytoskeleton: muscle/non-muscle motility / Chapter 9 / TM</td>
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<tr>
<td>May 19</td>
<td>Cell communication: an overview / Chapter 15 / TM</td>
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<td>May 22</td>
<td>Cell communication: G-protein coupled / Chapter 15 / TM</td>
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<tr>
<td>May 24</td>
<td>Cell communication: tyrosine phosphorylation / Chapter 15 / TM</td>
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<td>May 26</td>
<td>Cell communication: apoptosis / Chapter 15 / TM</td>
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<td>May 29</td>
<td>Immune Response / Chapter 17 TM</td>
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<tr>
<td>May 01</td>
<td>Immune Response / Chapter 17 TM</td>
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<tr>
<td>May 03</td>
<td>Review for final / TM/SG</td>
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**Final Exam Monday, May 6, 8-10 am Janssen Engineering Bldg room 104**
Exams

There will be three exams (50 minutes) and a comprehensive final (120 minutes; 50% of the final exam will cover course material from the third hour exam).

The exams may be comprehensive; that is, they can cover materials from the beginning of the course.

- Exam questions will be based upon materials presented in lectures and assigned readings.
- All students will be required to take the final exam, and there will be no early finals given in this course.
- Correct spelling is important; incorrect spelling of an answer will result in a deduction of 25% of the worth of the question. Please draw neatly and clearly label all parts of an illustration.
- Exams may contain take-home questions
- Requests to regrade an exam are due in writing by 5 pm; three days after publishing the answer key (regrade requests submitted after this time will not be accepted). Summing errors can be corrected at any time.
**Summary of your grade**

<table>
<thead>
<tr>
<th>Points</th>
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<tr>
<td>Hour exams (3 / 200 points each)</td>
<td>600</td>
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<tr>
<td>Final exam (1 / 400 points)</td>
<td>400</td>
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<tr>
<td>Total</td>
<td>1000</td>
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**Grading**

Grades will be based solely upon the percentage of total points you have accumulated.

- 90% or greater of the total accumulated points = A
- 80% = B
- 70% = C
- 60% = D
- Below 60% = F

**Excused Absence**

An absence from class is excused if it is due to a medical problem; a medical problem is defined as any physiological compromise that requires medical attention (a visit to a medical facility). Participation in extracurricular activities is not a valid basis for an excused absence; if there is any question, see me first.

**Rules for the course**

The rules for this course are outlined in the “Student Code of Conduct” for the University of Idaho. The most important of these rules are listed below:

**ARTICLE II—ACADEMIC HONESTY.**

1. Cheating on classroom or outside assignments, examinations, or tests is a violation of this code. Plagiarism, falsification of academic records, and the acquisition or use of test materials without faculty authorization are considered forms of academic dishonesty and, as such, are violations of this code. Because academic honesty and integrity are core values at a university, the faculty finds that even one incident of academic dishonesty seriously and critically endangers the essential operation of the university and may merit expulsion. [rev. 7-98]

2. The operation of UI requires the accuracy and protection of its records and documents. To use, make, forge, print, reproduce, copy, alter, remove, or destroy any record, document, or identification used or maintained by UI violates this code when done with intent to defraud or misinform. Entrance without proper authority into any private office or space of a member of the faculty, staff, or student body is a violation of this code.

3. Instructors and students are responsible for maintaining academic standards and integrity in their classes. Consequences for academic dishonesty may be imposed by the course instructor. Such consequences may include but cannot exceed a grade of “F” in the course. The instructor should attempt to notify the student of the suspected academic dishonesty and give the student an opportunity to respond. The notice and the opportunity may be informal and need not be in writing. Penalties for any disciplinary infraction must be judicially imposed. [See 1640.02 C-5] [rev. 7-98]

**Learning Outcomes**

In accordance with UI Learning Outcomes, it is expected that students will:

- Learn and Integrate: Students will apply their previous knowledge of biology to gain a basic understanding of the molecular basis of life.
- Think and Create: Students will be expected to apply the concepts and approaches learned here to solve future academic and professional problems.
Communicate: Students will be expected to better communicate with others using the language of biology.

Clarify Purpose and Perspective: It is expected that all students will gain important insights into molecular biology that allows them to exist, read and then contemplate this sentence.

Practice Citizenship: It is every student’s responsibility to share their knowledge with others as the general public is ill-informed on many relevant topics like gene and stem cell therapies.

Disability Support Services
Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 306 in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course.

- 885-6307
- email at <dss@uidaho.edu>
- website at <www.uidaho.edu/dss>

Students should present a completed and signed Accommodation Checklist for the current semester, from our office when requesting accommodations. If they do not, please refer them to the Disability Support Services office (Idaho Commons, Room 306) to obtain one. If you have any questions regarding a student(s) with a disability(s), or how to best work with a particular student in class, please contact our office.