Biology 312
Cell and Molecular Biology
SPRING SEMESTER 2022

3 Credits
Instructors: Dr. Tanya Miura and Dr. Scott Grieshaber

Tanya Miura  tmiura@uidaho.edu
Office: Room 146 Life Sciences Building
Office Hours: by appointment

Scott Grieshaber  scottg@uidaho.edu
Office: Room: 133 Gibb Hall
Office Hours: by appointment

Lecture:  MWF 9:30-10:20am
JEB 104

Students will attend lectures in-person.

Recorded lectures will be provided (if available) for University-approved excuses only. They will NOT be posted for general use.

Required Textbook:

Karp’s Cell and Molecular Biology: Concepts and Experiments (8th edition) by Iwasa & Marshall
ISBN 9781119686385
*The electronic textbook, including online content, is automatically charged to your account upon course enrollment. Click on the ‘Wiley Course Resources’ link on the course Canvas site to access the ebook and other online resources.

Tips for success in class:

Attend class! Bring a copy of the slides and annotate them as we go. The lecture slide sets often include extra material that can be helpful but is not necessarily core material. Posted material might change slightly, in which case we will note this on Canvas. Attending class will help you to sort this out and prevent you from getting overwhelmed with content. Read the text prior to lecture and use the Wiley Plus resources and our office hours to help understand material.

Posted lecture materials: Lecture slides will be posted on Canvas before class each day. Some slides will be updated right before class to correct or add content and this revised content will be posted and marked accordingly.

LECTURE OUTLINE: topics may change, Exam dates will NOT change

Part I Building and Fueling a Cell
Jan  12  Introduction / Chapter 1 / TM & SG
      14  Macromolecules / Chapter 2 / SG
MLK Day No class
Energetics / Chapter 3 / SG
Membrane structure / Chapter 4 / SG

Membrane function / Chapter 4 / SG
Mitochondria: structure and TCA cycle / Chapter 5 / SG
Mitochondria: electron transport and ATP synthesis / Chapter 5 / SG

Chloroplasts: photosynthesis and carbohydrate synthesis / Chapter 6 / SG

Feb 02 Nuclear structure / Chapter 12 / SG
DNA structure and chromatin / Chapters 10 & 12 / SG

Exam 1 (covers lecture and readings through February 04)

Part II Information Processing in the Cell
Transcription / Chapter 11 / SG
mRNA processing / Chapter 11 / SG
rRNA and tRNA processing / Chapter 11 / SG
Translation / Chapter 11 / SG

President’s Day No class
Cell cycle: DNA replication / Chapter 13 / SG
Cell cycle: DNA repair / Chapter 13 / SG

Cell cycle: control / Chapter 14 / SG
Cell cycle: mitosis, cytokinesis / Chapter 14 / SG
Cell cycle: meiosis / Chapter 14 / SG

Molecular biology techniques / Chapter 18.25 SG
Review Exam 2
Exam 2 (covers lecture and readings through March 07)

Spring Break No Class

Part III Regulation and Organization of Cellular Processes
Regulation of gene expression / Chapter 12 / TM
Regulation of gene expression / Chapter 12 / TM
Regulation of gene expression / Chapter 12 / TM
Regulation of gene expression / Chapter 12 / TM

Cell environment / Chapter 7 / TM

Endomembrane system / Chapter 8 / TM
Endomembrane system / Chapter 8 / TM
Endomembrane system / Chapter 8 / TM

Cell environment / Chapter 7 / TM
Cell environment / Chapter 7 / TM
Thursday, May 12 Final Exam (8:00 AM – 10:00 AM)

Exams:

Exams will be taken on Canvas during a 75 minute window around the scheduled class period (9:20-10:35am). It is the student’s responsibility to identify a location to take the exam to ensure they have uninterrupted time and a stable internet connection. Locations on campus include JEB 104, the library, computer labs, etc. An instructor will be available in JEB 104 during scheduled exams if students prefer to take the exam in the classroom on their laptop computer.

There will be three exams (60 minutes and 100 points each) and a final exam (120 minutes; 200 points). The final exam will include 100 points on material covered after the 3rd exam and 100 points will cover comprehensive material from the entire semester.

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.

Make-up Exams:

If you know you will be absent for an upcoming exam, contact the instructor to make alternative arrangements. Make-up exams will only be provided for UI-approved excuses (documentation required). Any requests for make-up exams after the exam is given (for example, unexpected illnesses) will be at the discretion of the instructor and may be an all-essay exam.

Homework:

Five sets of homework questions, worth 10 points each, will be assigned through-out the semester. Due dates will be announced in class and posted on Canvas. Homework will be completed on Canvas.
### Grading:

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<thead>
<tr>
<th>Points</th>
<th>Description</th>
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<tbody>
<tr>
<td>300</td>
<td>Hour exams (3 x 100 points each)</td>
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<tr>
<td>200</td>
<td>Final exam (1 x 200 points)</td>
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<td>50</td>
<td>Homework (5 x 5 points each)</td>
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<td>550</td>
<td>Total</td>
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Grades will be based solely upon the percentage of total points earned. No extra credit will be available.

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
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<tr>
<td>B</td>
<td>80-89%</td>
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<td>C</td>
<td>70-79%</td>
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<tr>
<td>D</td>
<td>60-69%</td>
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<tr>
<td>F</td>
<td>0-59%</td>
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### 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.
o 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.

o 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.

**Center for Disability Access and Resources**
Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through CDAR located in the basement of the Bruce Pitman Center in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course.

- Phone: 208-885-6307
- Email: cdar@uidaho.edu
- Website: https://www.uidaho.edu/current-students/cdar

**Tutoring and College Success (TCS)**
TCS offers three distinct services dedicated to student success:

- Vandal Tutoring provides drop-in style tutoring in person at the Library or online through https://www.uidaho.edu/current-students/academic-support/asp/tcs/tutoring/find-a-tutor at no cost to undergraduates.

- SI-PASS provides peer assisted study sessions for difficult courses. You can find the schedule of currently supported courses at https://www.uidaho.edu/current-students/academic-support/asp/tcs/si

- Academic Coaching offers students an opportunity to work with a coach, one on one, to improve their academic skills such as: effective studying, test taking, time management, and note taking. Visit https://www.uidaho.edu/current-students/academic-support/asp/tcs/academic-coaching to schedule an appointment, attend a workshop, or find resources.