

Biology 312

Cell and Molecular Biology

FALL SEMESTER 2013

3 Credits

Instructors: J G Cloud and P. Fuerst

J. G. Cloud

Office: Room 238 Gibb Hall

Office Hours: 10:30-11:30 pm MWF (or by appointment – see me after class)

P. Fuerst

Office: Room 145 Life Sciences Building

Office Hours: (R 8:30-9:30 and 2:30-4:30)

except:

August 15 8:30-9:30 and 3:30-4:30

August 22 8:30-9:30 and 3:30-4:30

August 29 8:30-9:30 and 3:30-4:30

September 12 8:30-9:30 and 3:30-4:30

September 19 8:30-9:30 and 3:30-4:30

November 14 8:30-9:30

November 21 8:30-9:30

December 5 2:30-4:30

Lecture: MWF 9:30-10:20; TLC 047

Required Textbooks:

Cell and Molecular Biology (7th edition) by Gerald Karp

LECTURE OUTLINE

Aug	26	Introduction / Chapter 1 / jc & pf
	28	Macromolecules / Chapter 2 / jc
	30	Energetics / Chapter 3 / jc
Sept	02	Labor Day / No Class
	04	Membrane structure / Chapter 4 (120-147) / jc
	06	Membrane functions / Chapter 4 (147-163) / jc
	09	Mitochondria: structure and TCA cycle / Chapter 5 (178-187) / jc
	11	Mitochondria: electron transport and ATP synthesis / Chapter 5 (188-207) / jc
	13	Chloroplasts: structure and photosynthesis / Chapter 6 (211-226) / jc
	16	Chloroplasts: carbohydrate synthesis / Chapter 6 (226-233) / jc
	18	Nuclear structure / Chapter 12 (488-512) / jc
	20	DNA structure and chromatin / Chapters 10 (387-411) & 12 (488-512) / jc
	23	Transcription / Chapter 11 (426-447) / jc
	25	mRNA processing / Chapter 11 (448-461) / jc
	27	Exam 1 (covers lecture and readings through 20Sept)
	30	rRNA and tRNA processing / Chapter 11(435-440; 461-466) / jc

Oct	02	Translation / Chapter 11 (461-482) / jc
	04	Regulation of gene expression: transcription / Chapter 12 / pf
	07	Regulation of gene expression: transcription / Chapter 12 / pf
	09	Regulation of gene expression: translation / post-translation / Chapter 12 / pf
	11	Cell cycle: DNA replication / Chapter 13 (545-564) / jc
	14	Cell cycle: DNA repair / Chapter 13 (564-571) / jc
	16	Cell cycle: control / Chapter 14 (572-581) / jc
	18	Cell cycle: mitosis, cytokinesis / Chapter 14 (581-602) / jc
	21	Cell cycle: meiosis / Chapter 14 (602-616) / jc
	23	Cell cycle: apoptosis / Chapter 15 (656-660) / jc
	25	Exam 2 (covers lecture and readings through 18Oct)
	28	Cell environment: extracellular matrix / Chapter 7 / pf
	30	Cell environment: cell adhesion and junctions / Chapter 7 / pf
Nov	01	Membrane systems: smooth and rough endoplasmic reticulum / Chapter 8 / pf
	04	Membrane systems: RER / Golgi complex; / Chapter 8 / pf
	06	Membrane systems: Golgi complex / exocytosis / Chapter 8 / pf
	08	Membrane systems: endocytosis / lysosomes / Chapter 8 / pf
	11	Cytoskeleton: microtubules / Chapter 9 / pf
	13	Cytoskeleton: cilia, flagella, and motility / Chapter 9 / pf
	15	Cytoskeleton: intermediate filaments and microfilaments / Chapter 9 / pf
	18	Cytoskeleton: muscle and nonmuscle motility / Chapter 9 / pf
	20	Cell communication: an overview / Chapter 15 / pf
	22	Exam 3 (covers lecture and readings through 15Nov)
Dec	02	Cell communication: G-protein coupled / Chapter 15 / pf
	04	Cell communication: tyrosine phosphorylation / Chapter 15 / pf
	06	Cell communication: other second messengers / Chapter 15 / pf
	09	Principles of Cancer cells / Chapter 16 / pf
	11	Immune Response / Chapter 17 pf
	13	Review / pf
	17	Final Exam (10:00 am – 12:00 noon)

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, assigned readings, and laboratory materials.
- 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/quiz 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	Points
Hour exams (3 / 220 points each)	660
Final exam (1 / 340 points)	340
Total	1000

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.

Learning Outcomes: At the end of this course students should be familiar with the organization of the cell at the molecular level. Students should understand how genes are regulated, how RNA is processed, how proteins are made and trafficked, how cell division is mediated and regulated, have a basic understanding of the immune system and cell signaling and be familiar and comfortable considering these events with respect to each other.

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]