

## **BIOL 364- CELL PHYSIOLOGY**

### **1. General information**

**Lectures :** Mondays and Wednesdays, 10:15-11:30 AM, in SI-H01.

**Professor: Dr. Alisa Piekny**

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Email: apiekny@alcor.concordia.ca

**Office hours:** By appointment and immediately after most lectures.

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Office hours: By appointment.

### **2. Course Description**

This course covers general and specialized processes at the cellular level in eukaryotes and prokaryotes; protein folding and degradation, signaling by nerves, bioenergetics (respiration and photosynthesis), cell motility, muscle contraction, eukaryotic cilia and flagella, sensory perception, and immunology. Lectures only.

#### ***Topics***

- *Advanced Protein Topics* (Protein Folding, Chaperones, Protein Degradation)
- *Membrane Transport Processes* (Transport of Water, Ion Transport, Membrane Potentials)
- *Cellular Neurophysiology* (Signaling via Axons and across Synapses)
- *Bioenergetics* (Respiration, Photosynthesis)
- *Sensory Systems* (Mechanoperception (touch and hearing), Chemoperception (taste, smell), Visual Perception and Bacterial Chemotaxis)
- *The Immune System*
- *RNA Interference*
- *Coupling of Chemical and Mechanical Energy* (Molecular Motors, Muscle Contraction, Cell Crawling, Cilia and Eukaryotic Flagella)

### **3. Objectives**

Students should acquire a comprehensive understanding of the topics listed above including fundamental concepts and their experimental foundations.

#### 4. Schedule

**The Midterm Exam will be held on Wednesday *February 15th* instead of lecture.**

**Multiple quizzes will be offered throughout the course. These quizzes offer an easy 10% of the final grade. A score of at least 50% correct responses gives full credit. These quizzes are intended to provide deadlines for learning the material that are more regular and immediate than the Midterm and Final exams.**

**The final exam will be scheduled by the Exams Office.**

#### 5. Course Materials

**Reading lists and questions for the various topics will be posted on the course website to improve your understanding of the material. Powerpoint slides from the lectures also will be posted after the lecture.**

The assigned readings are from research articles, review articles, and text books. A list of these assignments is available through a link in the first box of the course website. For certain topics, multiple readings are provided to give different coverage of more complex topics. The sources of these readings are:

1. The BIOL 364 Course Pack is available at the Loyola Campus Bookstore and has all or most readings (but in black and white).
2. Vanier Library [Reserves](#) has many, but not all, readings as pdf files or the hardcopy book.
3. Links directly to these articles can be found on the reading list in the Moodle site for the course. Most are only available through a Concordia computer or the library e-journals webpage.

#### **Options:**

1. Purchase the Course Pack and obtain the color images from lecture slides or the articles (via the internet or library; see reading list).
2. Download most readings from the electronic reserves at the library website and check out the Neurophysiology books and Molecular Cell Biology at Vanier Library (3 hour reserve).

#### 6. Grading

**Final grades** will be determined from the highest cumulative exam score determined from the following weightings;

**Quizzes 10%, Midterm exam 30%, Final exam 60%**

**Quizzes 10%, Final exam 90%**

**Midterm exam 40%, Final exam 60%**

**Exams** will cover material presented in lectures and from the assigned readings. Questions will be both “multiple-choice” and “short answer”. Bring pencils and erasers. The use of electronic devices of any kind (calculators, electronic dictionaries, and especially cell phones) is not allowed.

**Quizzes** will be offered throughout the course. They are intended to allow students to evaluate their progress, show example exam questions, and provide a friendly incentive to learn the course material as it is covered and not at "the last minute". For each quiz, a score of 50% or higher will give full credit. One quiz can be missed or failed at no penalty. It is the student's responsibility to take the on-line quizzes on a computer with a stable internet connection and sufficient memory (e.g. with all other programs closed).

**The final exam will cover the entire course.**

Due to the additional months of preparation time available to students taking a deferred or supplemental exam, these exams will be more challenging than the final exam at the end of the term.

**There are no make-up exams or quizzes. For example, if you miss the midterm exam and have a medical note, then the final exam will be weighted as 90% of the final grade.**