COURSE OVERVIEW
CELL BIOLOGY ONLINE - BIOL 306

Cell biology is the study of all aspects of cells. As the fundamental unit of life, our understanding of our own bodies and as well as those of all other organisms hinges on our understanding of the structure and function of cells. Knowledge of cell biology is critical to all disciplines in biology and medicine. The introduction to cell biology students receive in this course is presented in the context of six learning objectives.

STUDENT LEARNING OBJECTIVES:
At the completion of this course, students should be able to:

- Describe the chemical composition of living cells and the structural and functional roles of the primary macromolecules
- Compare and contrast the external and internal structure of prokaryotic and eukaryotic cells and describe the functions of structures associated with those cell types
- Describe the structure of biological membranes, the function of endoplasmic network found within eukaryotic cells, and the mechanisms by which signals are transmitted across those membranes
- Describe the biochemical pathways associated with aerobic respiration and photosynthesis, including the role of enzymes in cellular metabolism
- Describe the structure and organization of the genetic material as well as how this material is manipulated during replication, transcription, and translation
- Compare and contrast mitosis and meiosis and describe the events that occurs during each cell division process

DETAILED COURSE DESCRIPTION
This course examines topics fundamental to cell and molecular biology. The course begins with an introduction to the chemical basis of life and the primary biological macromolecules, and then moves to an overview of the structure of prokaryotic cells, eukaryotic cells, and viruses. Emphasis is also placed upon the structure and function of the plasma membrane and the endomembrane system within eukaryotic cells. The course also considers enzymes and other components of metabolism as a prelude to detailed exploration of glycolysis, aerobic respiration, and photosynthesis. The latter part of the course focuses upon the genetic material in cells, including the structural organization of DNA in the nucleus, DNA replication, transcription, translation, and the control of gene expression. The course also examines cell reproduction via mitosis and meiosis. Topics in cell signaling and transduction are also covered.

REQUIRED READING MATERIALS:

The most cost efficient choice for getting the textbook and the access card to get to the courses supplementary site on WileyPlus (a separate and equally valuable site with resources beyond the course Desire2Learn site) is to purchase the 3-hole punch binder version of the text with the code card (ISBN 9780470558126). If you wish to get the textbook used from any source, that’s fine.
too. You can get the WileyPlus code card (ISBN 9780470503546) separately to get access to that site. NOTE: if students choose to acquire the text through the publisher’s website, they should make sure that the version they obtain also provides them with access to the WileyPlus site.

**OPTIONAL (BUT RECOMMENDED) READING MATERIALS:**
- Electronic resources on various websites, including the course WileyPlus site

**RELEVANT COURSE URL ADDRESSES**
- https://online.siu.edu (Students are automatically enrolled in Desire2Learn)
- WileyPlus companion site (Requires access code; being updated)

**COURSE FORMAT:**
The course is divided into 12 learning modules. Each learning module includes a reading assignment from the textbook (usually one to two chapters) and readings from electronic resources on the course Desire2Learn site or other websites. The reading assignments for each module are specified below. A Module Study Guide is also provided below, which indicates the central concepts of that module (which also correspond to the subjects covered on the examinations). The learning modules must be completed in a specific sequence. As a semester-based course, exams, essays, and all other assignments have specific due dates (see below). If a due date is missed without prior arrangements having been made with the course instructor, a zero will be entered for that graded assignment. Students are strongly encouraged to schedule exams and submit essays well before the indicated due date in the event that subsequent attempts are necessary. If an essay needs to be resubmitted or a student wants to retake an exam but the due date for that essay or exam has passed, the most recent score for that essay or exam will become the final score and not further attempts will be permitted.

**COURSE REQUIREMENTS AND GRADING**
The grade in this course is based upon the following examinations and writing assignments. There are a total of 800 points available in the course, distributed as follows:

- Examinations: 4 @ 60 pts = 240 pts (30%)
- Module essays: 12 @ 25 pts each = 300 pts (37.5%)
- Question sets: 4 @ 45 pts = 180 pts (22.5%)
- Final exam essay: 1 @ 100 pts = 100 pts (12.5%)

All examinations in this course are delivered through Desire2Learn. Examinations have a time limit of 90 minutes. If any examination is not completed within the allotted time, the score is rendered invalid. The four examinations must be proctored (see p.11 and 14 below.). Examinations can be taken up to three times. An examination does not have to be taken again if the first score is acceptable. If taken more than once, the HIGHEST score of the three attempts will be used in the calculation of the score. Note that if an examination is taken more than once, Desire2Learn automatically generates a new, unique question set for each attempt so that no two exam attempts are identical. The final exam can only be taken once. The module essays distributed through the course require students to extract and synthesize specific material from the reading assignments and then describe and discuss that material in a written form. The subject matter for these essays is drawn from topics key to a fundamental understanding of
processes at the cellular level. As a 300-level course, the emphasis of evaluation and assessment is placed not only on factual recall of the topic material, but on the student’s ability to understand and apply that material while simultaneously helping to build their writing skills. The questions sets are drawn from the various study questions associated with each textbook chapter. These questions are grouped together to form four question sets, with one set due with every deadline in the course. The final exam essay is comprehensive in the sense that answering the exam question requires material to be drawn from the entire course. In that sense, it evaluates the student’s ability to integrate material from the various modules.

The essay assignments and other documents for this course must be submitted through the dropboxes in Desire2Learn. Once submitted, they are automatically submitted to a plagiarism check which is reported to the course instructor. Essays that successfully pass this plagiarism check will be graded by the instructor. Significant flags noted during the plagiarism check may prompt contact from the instructor with information on how to resolve the issue and possible penalties if the issues are not corrected. Following the module overviews below, there are additional sections of this guide which provide information on the graded material in this course.

The grading rubric for the course is as follows:

<table>
<thead>
<tr>
<th>Points Range</th>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>720 – 800</td>
<td>(90-100%)</td>
<td>A</td>
</tr>
<tr>
<td>640 – 719</td>
<td>(80-89%)</td>
<td>B</td>
</tr>
<tr>
<td>560 – 639</td>
<td>(70-79%)</td>
<td>C</td>
</tr>
<tr>
<td>480 – 599</td>
<td>(60-69%)</td>
<td>D</td>
</tr>
<tr>
<td>479 points or less</td>
<td>(&lt;60%)</td>
<td>F</td>
</tr>
</tbody>
</table>

**STUDY RESOURCES**
There are two study resources that students can use to prepare for examinations and the final exam. Additional detail on these resources is provided in the course study guide. The first is the textbook. The second is the suite of study aids on the WileyPlus website (provided by the publisher and linked through the course’s Desire2Learn page). These study aids are found within the “Read, Study, & Practice” section, within each chapter, under the “study resources” heading. There are also practice quizzes, which are listed in the “assignments” section, organized by module. Access to this site may require an additional fee, so the content here is listed as being optional for the course. Use of the WileyPlus site is recommended however.

**COMMUNICATING WITH THE INSTRUCTOR**
The fastest and most reliable means to reach the instructor is to send a message through Desire2Learn. Messages will typically be returned in <24 hr unless the instructor has indicated an absence due to professional reasons. Students will be notified in advance if the instructor expects to be unavailable for any length of time. The instructor can be available for “virtual office hours” via Skype or telephone for students who wish to communicate verbally. Use 618-536-2331 as the phone number to contact. This will reach the instructor’s departmental office. To set up a Skype conference, contact the instructor several days in advance via e-mail to schedule the call.