# Cell Biology - BIOL 300 (03)
## Tentative Lecture Schedule - Spring, 2012

| Week | Day | Date | Chapter(s) | Topic |
|---|---|---|---|---|
| #1 | T | 17-Jan-12 | 1 | Review: Introduction to Cells |
| | R | 19-Jan-12 | 2 | Review: Chemical Components of Cell |
| #2 | T | 24-Jan-12 | 3 | Energy, Catalysis and Biosynthesis |
| | R | 26-Jan-12 | 3 | Energy, Catalysis and Biosynthesis, on line quiz #1 |
| #3 | T | 31-Jan-12 | 4 | Protein Structure and Function |
| | R | 2-Feb-12 | 4 | Protein Structure and Function, on line quiz #2 |
| #4 | T | 7-Feb-12 | 11 | Membrane Structure |
| | R | 9-Feb-12 | **Exam #1 (20%)** | Chapters 1-4 |
| #5 | T | 14-Feb-12 | 11 | Membrane Structure |
| | R | 16-Feb-12 | 12 | Membrane Transport, |
| #6 | T | 21-Feb-12 | 12 | Membrane Transport |
| | R | 23-Feb-12 | 13 | How Cells Obtain Energy From Food, on line quiz #3 |
| #7 | T | 28-Feb-12 | 13 | How Cells Obtain Energy From Food |
| | R | 1-Mar-12 | 14 | Energy Generation in Mitochondria and Chloroplasts, on line quiz #4 |
| #8 | T | 6-Mar-12 | 14 | Energy Generation in Mitochondria and Chloroplasts |
| | R | 8-Mar-12 | **Exam #2 (20%)** | Chapters 11-14 |
| #9 | T | 13-Mar-12 | | spring break |
| | R | 15-Mar-12 | | spring break |
| #10 | T | 20-Mar-12 | 15 | Intracellular Compartments and Transport |
| | R | 22-Mar-12 | 15 | Intracellular Compartments and Transport, on line quiz #5 |
| #11 | T | 27-Mar-12 | 15<br>16 | Intracellular Compartments and Transport<br>Cell Communication |
| | R | 29-Mar-12 | 16 | Cell Communication, on line quiz #6 |
| #12 | T | 3-Apr-12 | 16 | Cell Communication |
| | R | 5-Apr-12 | **Exam #3 (20%)** | Chapters 15 and 16 |

| Week | Day | Date | Chapter(s) | Topic |
|---|---|---|---|---|
| #13 | T | 10-Apr-12 | 17 | Cytoskeleton |
| | R | 12-Apr-12 | 17 | Cytoskeleton |
| #14 | T | 17-Apr-12 | | no class, G.R.E.A.T. Day |
| | R | 19-Apr-12 | 18 | The Cell Division Cycle, on line quiz #7 |
| #15 | T | 24-Apr-12 | 18 | The Cell Division Cycle |
| | R | 26-Apr-12 | 20 | Cellular Communities: Tissues, Stem cells and Cancer, on line quiz #8 |
| #16 | T | 1-May-12 | 20 | Cellular Communities: Tissues, Stem cells and Cancer |
| #17 | M | 7-May-12 | **Final Exam (25%)** | Chapters 17, 18 and 20 |
| | | | **8:00-11:00 P.M.** | Chapters all of the above |

## A. **Course Description**

Welcome to Bio 300! In this course we will explore how life works at the cellular and molecular level. These are the central concepts and questions that we will examine:

*Macromolecules and their interactions.* What are the molecular and macromolecular components of cells? What determines the shapes of proteins and how is this related to their function? How are proteins regulated?

*Cell membranes.* What is the composition of plasma membranes? How is transport across membranes accomplished and regulated?

*How cells obtain energy and energy generation.* How do cells use glucose for food? Energy generation in mitochondria and chloroplasts.

*Cellular compartmentalization.* How does the cell maintain functionally distinct compartments? What are the functions of organelles and how do they accomplish them? How is material transported between intracellular compartments and how is this regulated? How is secretion and endocytosis accomplished?

*Organization of cells into tissues.* How do cells interact with their extracellular environment and with each other? How do cells use adhesion and the cytoskeleton to regulate their shape, and accomplish functions such as muscle contraction, mitosis, and cell migration? What are stem cells, and what is the molecular basis of their properties?

*Signal transduction and cell-cell communication.* How do cells communicate with each other and interpret signals from their environment? How are these signals transduced into changes in cell behavior? How does misregulation of cell signaling contribute to diseases such as cancer?

*Experimental approaches in cell biology.* Our knowledge of cell biology is based

on experimental observations. In this class we will ask: how do we know what we know? What is the evidence? Much progress has been made towards understanding the structure and function of cells; however, there is still a vast amount to discover.

**B. Learning Outcomes**

When you have successfully completed this course you will:

--Have a **command** of the basic facts, concepts, and principles in cell biology.

--Be able to **use and apply** those facts, concepts, and principles appropriately, even in situations that you have not previously encountered.

--Be able to **interpret and evaluate** evidence for hypotheses about cell structure and function.

--Be able to **devise strategies** to address unsolved issues in cell biology.

(Courtesy of Dr. Harold Hoops)

C. **Text**: Essential Cell Biology, the 3rd edition (2009) by Bruce Alberts *et al.* Garland Science, NY. The text is available at the campus bookstore. Slides for each lecture will be available in the course materials folder of MyCourses.

D. **INSTRUCTOR**: Robert W. O'Donnell
OFFICE: ISC 355
TELEPHONE: 245-5313
E-MAIL: odonnell@geneseo.edu
OFICE HOURS: MWF 10:30 to 11:30, TR 11:30 to 12:20; other times available by appointment.

E. **Grading**:
The final exam will be cumulative and will encompass your knowledge of basic principles of Cell Biology as they relate to the topics covered in chapters 17, 18 and 20 of your text. Each exam will cover lecture notes and appropriate chapters in text. Old exams will be made available in myCourses. On line quizzes will make up 15% of your final grade and will cover material from lectures and readings. They are open book but timed (limited to 20 minutes) and it is **expected** that you do them on your own. I will open the quiz on Thursday afternoon and close them on Friday mornings.
Each exam will have bonus points available from questions related to an assigned reading in Cell Biology. The assigned readings will be available in the course materials folder of myCourses!

F. **Accommodations for Students with Disabilities**:
SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional or learning disabilities. Students should consult with the Director in the Office of Disability Services (Tabitha Buggie-Hunt, 107D Erwin, tbuggieh@geneseo.edu) and their individual faculty regarding any needed accommodations as early as possible in the semester.