

# CELL BIOLOGY 301

Course #: 34-BIOL-301  
 Office & hrs: EDS 215 P, 12-1, M-F  
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**SYLLABUS**  
 Autumn Quarter  
 2009-2010

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**COURSE OBJECTIVES FOR CELL BIOLOGY 301:** To learn: 1) the history of our understanding of the cell, 2) the structure and function of biomacromolecules (*i.e.*, protein, nucleic acids, polysaccharides, lipids), 3) principles of enzymology, 4) elements of bioenergetics, 5) cell physiology and structure (in particular glycolysis, respiration and photosynthesis), 6) regulation/coordination of cellular processes, 7) cytology nomenclature and its etymology.

**REQUIRED TEXT:**

Becker, Wayne M., Kleinsmith, Lewis J., Hardin, Jeff, *The World of the Cell*, 7<sup>th</sup> Ed., Benj/Cummings Pub., (2008).

**REQUIRED LAB MATERIALS:**

Graph-lined composition notebook, Precise V5 black pen (or other permanent black non-ball point pen.)

Please fasten this calendar inside the front cover of your text, bring the text to class daily.

MONDAY	WEDNESDAY	FRIDAY
<b>Lab/recitation meets on Tuesday afternoon, 2:00-5:00</b> (Pop pre-lab quizzes will happen.)	9/23 Introduction to Course History: the threads of Cytology 1-13	9/25 Short History of Biochemistry 16-37 (read for chemistry review)
9/28 Cellular Macromolecules I: Proteins 40-53 <b>[9/29: QUIZ I]</b>	9/30 Cellular Macromolecules II: Nucleic acids & Polysaccharides 53-66	10/2 Cellular Macromolecules III: Lipids 66-70
10/5 Cellular Components Bioenergetics 74-124	10/7 Enzymes: protein catalysts 127-136	10/9 Enzyme Kinetics Classes of Enzyme Inhibitors 136-140
10/12 Enzyme Regulation Lineweaver-Burk Plots 140-150 <b>[10/13: QUIZ II]</b>	10/14 Membrane Structure 154-171	10/16 Membrane Proteins 171-187
10/19 Movement across a membrane 191-203	10/21 Active Transport, Permeases 203-216 <b>LAB NOTEBOOKS DUE</b>	10/23 Cell energy, ATP 221-229
10/26 Glycolysis and fermentation 229-244 <b>[NOTEBOOKS DISCUSSED 10/27]</b>	10/28 Respiration: Mitochondrion structure, TCA cycle 248-265 Electron Transport	10/30 Oxidative Phosphorylation Chemiosmotic ATP synth. 265-275 Midterm Review questions?
11/2 <b>MIDTERM</b>	11/4 Intro to Photosynthesis Chloroplasts, Function of light Rxns 275-303	11/6 Photosynthesis I: Light Reactions, Intro to Drk Rxns 303-315
11/9 Photosynthesis II: Reductive carboxylation 318-349 Intracellular Compartments	11/11 <b>ARMISTICE DAY</b>	11/13 Endoplasmic reticula: Golgi Apparatus Exocytosis and endocytosis
11/16 Lysosomes & Peroxisomes 349-359 <b>[11/17: QUIZ III]</b>	11/18 Cell Junctions and Walls 496-507	11/20 The Cytoskeleton 425-450
11/23 Motility and Contractility 453-479	11/25 The Nucleus 535-556 <b>LAB NOTEBOOKS DUE</b>	11/27 <b>THANKS FOR EVERYTHING</b> (No classes, among others)
11/30 Cell Cycle <b>[12/1 QUIZ IV]</b> <b>[NOTEBOOKS DISCUSSED 12/1]</b>	12/2 Mitosis and its regulation 576-600	12/4 Catch up day... Review for Final Bring your questions from reviewing.
12/8 Tuesday <b>FINAL EXAM</b> 4:00 - 6:00 (in Lab) (Slot for labs meeting during 3:00)	Assigned readings are to be complete prior to class on the date in which they appear. Grades are determined by your position on a histogram of student cumulative points. For sophomore courses, midline generally marks the middle of the B. See <i>How To Take A Fankhauser Course</i> for additional information and suggestions.	