

## Course Outline for Biology 266

Fall Semester 2009 MWF, Period 4 (11:10 am-12:00N) Tomsich 101 Office Phone: X5394	Instructor: H. Itagaki Office: 108 Higley Email: itagaki@kenyon.edu Home Phone: 614-433-0165
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Text: Alberts, B., D. Bray, K. Hopkins, A. Johnson, J. Lewis, M. Raff, K. Roberts, P. Walter. (2009) *Essential Cell Biology*, 3<sup>rd</sup> ed. Garland Science, New York, NY. 731pp.

Plus outside reading assignments linked to course Moodle site.

<u>Date</u>	<u>Subject</u>	<u>Readings</u>
	<u>Introduction</u>	
Aug. 31	Introduction to the Course, Chemical Bonds	Ch. 1, 2
Sept. 2	Biological Molecules: Carbohydrates, Lipids	Ch. 2
4	Biological Molecules: Nucleic Acids, Amino Acids	Ch. 2
7	Energetics	Ch. 3
9	Proteins and Catalysis	Ch. 4
	<u>Membranes and Transport Processes</u>	
11	Cellular Membranes and Membrane Proteins	Ch. 11
14	Membrane Transport Processes I	Ch. 12
16	Membrane Transport Processes II	Ch. 12
18	<i>Discussion Session #1</i>	Reading TBD
21	Special Topic: The Neuronal Membrane and Neuron Function	Ch. 12, add'l reading
	<u>Energy Conversion in the Cell</u>	
23	Glycolysis	Ch. 13
25	TCA Cycle	Ch. 13
Sept. 28	Oxidative Phosphorylation	Ch. 14

Sept.	30	<b>Exam #1</b>	
Oct.	2	Photosynthesis I	Ch. 14
	5	Photosynthesis II	Ch. 14
		<u>Protein and Material Transport in the Cell</u>	
	7	Protein Packaging and Transport I	Ch. 15
	9	Protein Packaging and Transport II	Ch. 15
	12-13	<i>October Break</i>	
	14	Protein Packaging and Transport III	Ch. 15, add'l reading
	16	<i>Discussion Session #2</i>	Reading TBD
		<u>Cellular Communications and Control Systems</u>	
	19	Signals, Receptors and Second Messengers I	Ch. 16
	21	Signals, Receptors and Second Messengers II	Ch. 16
	23	Signals, Receptors and Second Messengers III	Ch. 16, add'l reading
		<u>Cytoskeleton, Motility and Cell Division and Its Control</u>	
	26	The Cytoskeleton I	Ch. 17
	28	The Cytoskeleton II	Ch. 17
	30	The Cytoskeleton III/Motor Proteins	Ch. 17, add'l reading
Nov.	2	<b>Exam #2</b>	
	4	Regulation of the Cell Cycle I	Ch. 18
	6	Regulation of the Cell Cycle II	Ch. 18
		<u>Cells, Tissues and Cancer</u>	
	9	Cell-Matrix Interactions I	Ch. 20
	11	Cell-Matrix Interactions II	Ch. 20
	13	Cancer I	Ch. 20
Nov.	16	Cancer II	Ch. 20

Nov.	18	Cancer III	Reading TBD
	20	<i>Discussion Session #3</i>	Reading TBD
Nov.	21-29	<i>Thanksgiving Break</i>	
	30	Special Topic: Prions - A Novel Information Transfer Process I	p. 125; add'l reading
Dec.	2	Special Topic: Prions - A Novel Information Transfer Process II	Reading TBD
	4	Special Topic: Prions - A Novel Information Transfer Process III	Reading TBD
		<u>The Immune Response</u>	
	7	Special Topic: Immunity I	Reading TBD
	9	Special Topic: Immunity II	Reading TBD
	11	Special Topic: Immunity III	Reading TBD
	14	Catch-Up Day	
Dec.	19	<b>Exam # 3</b> (6:30pm)	

# Biology 266: Cell Biology

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Plus outside reading assignments linked to course Moodle site.

**About the Course:** This course is designed to be an intermediate-level introduction to one of the pivotal fields in modern biology. It complements Biology 263 (Molecular Biology) in content, concentrating on the non-genomic aspects of cell function. We will cover topics such as biological membranes and ion channels; various aspects of material transport and regulation; regulation of cell energetics; cell growth and communication; neuron function; cancer and immunology. Aside from the main text, supplemental readings made up of original papers and reviews will be assigned.

**Prerequisites:** Biology 113 and 114 or 115 and 116

### Expectations:

Class Attendance: 100% attendance is expected, and absences will detract from one's grade. Please see me immediately about conflicts due to sports events, performances, religious holidays, etc.

Assigned Readings: To participate fully in class, you must thoughtfully read the assigned material before each meeting.

Class Participation: Any time in class - ask for clarification; pose a question; link disparate ideas together; draw on your own experience. I will call on people who are not participating. Raise your hand!

Schedules and Deadlines: Plan carefully. Extensions will not be granted for conflicts with the workload for other courses. Accommodations due to illness or other personal situations must be requested through the Dean of Students or the Health and Counseling Center.

Academic Honesty: Plagiarism and other forms of academic dishonesty **will not be tolerated**. Please make sure that you have read carefully the Academic Honesty Guidelines in the 2009-2010 Course of Study, pp. 24-27. If you have any questions, please see me.

**Grading:** There will be:

3 hourly exams @ 20% each	=	60%
1 short comprehensive exam	=	10%
3 short response papers for Disc. Sessions @ 5% each	=	15%
Unscheduled quizzes	=	5%
Attendance and class participation	=	<u>10%</u>
Total		100%

**The Exams:** There will be 3 hourly exams during the course of the semester: each is worth 20% of your grade. They are open-book and open notes and may ask you to apply your knowledge to new situations and problems. They will be predominantly essay questions.

Test Dates:	First hourly exam -	Wednesday, 30 September
	Second hourly exam -	Monday, 2 November
	Third hourly exam -	Saturday, 19 December @ 6:30pm

During the assigned exam time on Sat., 19 December, a short additional exam covering concepts from the entire course will be given. It is worth 10% of your grade

**Discussion Sessions:** During the course of the semester, there will be 3 discussion sessions focusing on a recent paper in cell biology. In preparation for the discussion session, each of you will be asked to write a **Short Response Paper** on the reading. These will be about a page in length, double-spaced, and will present a critique of an aspect of the reading, as well as the next question to be asked. The purpose of these assignments is to help you get ready for class discussion and to stimulate thinking. Short response papers are always due at the beginning of class on the day of the assignment. Late submissions will not be accepted. These three short responses will account for 15% of your grade.

**Unscheduled Quizzes:** 3-5 short 10-minute quizzes will be given in class during the semester. They will be worth a total of 5% of your grade.

**Attendance and Class Participation:** Attendance without tardiness is expected; roll will be taken each class. This and class participation will constitute 10% of your grade.

**Disabilities:** If you have a hidden or visible disability which may require classroom or test accommodations please see me as soon as possible during a scheduled office hour. If you have not already done so, you must register with the Coordinator of Disability Services (Erin Salva, [salvae@kenyon.edu](mailto:salvae@kenyon.edu), x5145), who is the individual responsible for coordinating accommodations and services for students with disabilities. All information and documentation of disability is strictly confidential. **No accommodations** will be granted in this course **without** notification from the Office of Disability Services.