CELL BIOLOGY **BIOL 5210** **Fall Semester, 2016**

Welcome to Cell Biology. This course will explore the astonishing world of eukaryotic cells! Knowledge acquired by studying cells will give you a scientific basis for understanding why certain diseases occur, how medicines and drugs produce their physiological effects, and how organisms such as humans function at the cellular and molecular levels.

THIS SYLLABUS IS NOT A CONTRACT. Dr. Adams reserves the right to revise any aspect of this syllabus at any time.

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Regularly-scheduled Office Hour: **Monday 1:30 – 2:30 PM** or by special appointment.

Lecture time and place: **Monday, Wednesday & Friday** **11:30 AM - 12:20 PM** **in FAV 262**

Course Objective: To **acquire factual knowledge** about intracellular structures and functions of eukaryotic cells. To have any hope of understanding eukaryotic cells, it is necessary to **memorize** a enormous amount of **factual information**. Consequently, this course requires an enormous amount of memorization.

Prerequisites: BIOL 1620 (General Biology), BIOL 3060 (Principles of Genetics), and CHEM 2300 or 2310 (Organic Chemistry). **Biochemistry** (CHEM 3700 or 5700) is **highly recommended** but is not a prerequisite.

Recommended Textbook: *Molecular Biology of the Cell*, 6th Edition (MBoC6).

Grading: Your final grade will be determined by the total number of points you score on the exams, divided by the total number of possible points on those exams. Your two (2) lowest exam scores will be dropped and will not count toward your grade. ***There is no other source of points. There is no extra credit in this course.***

The grading scheme used to determine final grades will be:

A	=	92.5 – 100 %
A-	=	< 92.5 to 89.5 %
B+	=	< 89.5 to 84.5 %
B	=	< 84.5 to 79.5 %
B-	=	< 79.5 to 74.5 %
C+	=	< 74.5 to 69.5 %
C	=	< 69.5 to 64.5 %
C-	=	< 64.5 to 59.5 %
D+	=	< 59.5 to 54.5 %
D	=	< 54.5 to 49.5 %
F	=	< 49.5 %

Example: if your total percentage score is 92.49999 %, you will get a final grade of "A-", and not "A".

Exams: There will be **seven (7) exams** worth 50 points each. Your two (2) lowest exam scores will be automatically dropped by Canvas, and will **not** be used to calculate your final grade.

Each lecture will be worth **approximately 10 points** on the exam. Each exam will cover (mostly) material presented since the previous exam.

On exams, you will be responsible for all material **presented verbally** in class, **written on the whiteboard** during class, or contained within **PowerPoint presentations** and **audio recordings** posted on Canvas.

If you don't attend class - for whatever reason - it is ***your responsibility alone*** to obtain the material **from your classmates or from the slides and audio recordings posted on Canvas**. No make-up lectures will be given.

Audio recordings of most lectures will be posted on Canvas. Occasionally, technical difficulties prevent this from happening.

Missed Exams: If you miss an exam - **for any reason** - you will receive **ZERO (0)** points as your score for the missed exam. No make-up exams will be given.

Any disputes about your exam score must be discussed with Dr. Adams **within three (3) working days** of the day the graded exam is returned to the class.

Disability Resource Center (DRC): If you have a condition that requires accommodation, please contact Dr. Adams and document your situation through the DRC during the first week of classes.

Requests for an incomplete (I) grade: Must comply with current USU regulations (see Schedule of Classes).

TENTATIVE LECTURE SCHEDULE

Date	Topic	Recommended Readings in MBoC6
August 29	How to succeed in this course	
August 31	Membrane Structure	pp. 565 - 576
September 2	Membrane Proteins	pp. 576 - 594
September 5	**NO CLASS** due to **Labor Day holiday**	
September 7	Principles of Membrane Transport	pp. 597 - 611
September 9	Ion Channels & Membrane Electrical Properties	pp. 611 - 620
September 12	**EXAM 1 (50 points possible)**	
September 14	Electrical Signaling by Cell Membranes	pp. 620 - 627
September 16	Chemical Synaptic Transmission	pp. 627 - 638
September 19	Chemical Synaptic Transmission	pp. 627 - 638
September 21	Compartmentalization of Cells	pp. 641 - 649
September 23	Transport between the Nucleus & the Cytosol	pp. 649 - 658
September 26	**EXAM 2 (50 points possible)**	
September 28	Peroxisomes & Endoplasmic Reticulum	pp. 666 - 691
September 30	Endoplasmic Reticulum	pp. 669 - 691
October 3	Vesicular Transport	pp. 695 - 703
October 5	Monomeric G-proteins Control Coat Assembly	pp. 703 - 710
October 7	Vesicular transport through the Golgi Apparatus	pp. 710 - 722
October 10	**EXAM 3 (50 points possible)**	
October 12	Principles of Cell Signaling	pp. 813 - 831
October 14	Signaling through G-Protein-Coupled Receptors	pp. 832 - 849
October 17	Signaling through Enzyme-Linked Receptors	pp. 850 – 867
October 19	Alternative Signaling Routes in Gene Expression	pp. 867 - 880
October 21	**NO CLASS - this is FALL BREAK DAY.**	
October 24	**EXAM 4 (50 points possible)**	
October 26	The Cytoskeleton	pp. 889 - 898
October 28	Actin & Actin-Binding Proteins	pp. 898 – 914
October 31	Myosin & Actin	pp. 915 - 925

November 2	Microtubules	pp. 925 - 944
November 4	Intermediate Filaments & Septins	pp. 944 - 950
November 7	**EXAM 5 (50 points possible)**	
November 9	Cell Polarization & Migration	pp. 951 - 960
November 11	Overview of the Cell Cycle	pp. 963 - 974
November 14	Control of Cell Division	pp. 1010 - 1018
November 16	Apoptosis and other forms of regulated cell death	pp. 1021 - 1032
November 18	Cell growth & survival – mechanistic Target of Rapamycin (mTOR)	
November 21	**NO CLASS - THANKSGIVING WEEK**	
November 23	**NO CLASS - THANKSGIVING WEEK**	
November 25	**NO CLASS - THANKSGIVING WEEK**	
November 28	**EXAM 6 (50 points possible)**	
November 30	Cell Junctions	pp. 1035 - 1057
December 2	Extracellular Matrix of Animals	pp. 1057 - 1074
December 5	Connections between cells and the extracellular matrix	pp. 1074 - 1081
December 7	Cancer	pp. 1091 - 1141
December 9	Stem Cells & Tissue Renewal	pp. 1217 - 1260
December 12	**EXAM 7 (50 points possible)**	