BSCI 330, Cell Biology and Physiology
Spring 2012, Tue & Thu 9:30-10:45 am
Bioscience Research Bldg 1101
Drs. Kan Cao and June Kwak

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kcao@umd.edu
Office hr: Mon 4-5 PM or by appointment
Lecture: Jan 26 - Spring Break

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Office hr: Thu 4-5 pm & by appointment

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<table>
<thead>
<tr>
<th>Lab Times</th>
<th>Mon</th>
<th>Tu</th>
<th>Wed</th>
<th>Th</th>
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<tbody>
<tr>
<td>9 am</td>
<td>1109</td>
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<tr>
<td>11 am</td>
<td>1102</td>
<td>1107</td>
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<td>2:30 pm</td>
<td>1101</td>
<td>1103</td>
<td>1106</td>
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<tr>
<td>6 pm</td>
<td>1104</td>
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Textbook: Molecular Biology of the Cell B. Alberts et al., 5th Ed.

Four pop quizzes will be given for a total of 40 points as part of grade.

<table>
<thead>
<tr>
<th>Date</th>
<th>#</th>
<th>Lecture Topic</th>
<th>Reading</th>
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</thead>
<tbody>
<tr>
<td>1/26 Th</td>
<td>1.</td>
<td>Course introduction: Cells and Genomes</td>
<td>Ch. 1</td>
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<tr>
<td></td>
<td>2.</td>
<td>Cell compartments and biological molecules</td>
<td>Ch. 2, 3, 12</td>
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<td></td>
<td>3.</td>
<td>Plasma membrane</td>
<td>Ch. 10,11</td>
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<td></td>
<td>4.</td>
<td>Nucleus, chromosome structure, telomeres,</td>
<td>Ch. 4, 12</td>
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<td>5.</td>
<td>Endoplasmic Reticulium (ER) and Golgi</td>
<td>Ch. 12, 13</td>
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<td>6.</td>
<td>Mitochondrial and chloroplast (recap/discussion)</td>
<td>Ch. 14</td>
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<td>2/16 Th</td>
<td>7.</td>
<td>Cells obtain energy</td>
<td>Ch. 4,14</td>
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<td>8.</td>
<td>Cytoskeleton (1)</td>
<td>Ch. 16</td>
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<td>9.</td>
<td>Cytoskeleton (2)</td>
<td>Ch. 16</td>
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<td>10.</td>
<td>Intracellular vesicular trafficking (1)</td>
<td>Ch. 13</td>
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<td>11.</td>
<td>Intracellular vesicular trafficking (2)</td>
<td>Ch. 13</td>
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<td>12.</td>
<td>Cell senescence and aging (recap/discussion)</td>
<td>Ch. 20</td>
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<td>3/15 Th</td>
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<td>EXAM 1 (Lectures 1- 6) (100 pts)</td>
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<td>7.</td>
<td>Cells obtain energy</td>
<td>Ch. 4,14</td>
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<td>8.</td>
<td>Cytoskeleton (1)</td>
<td>Ch. 16</td>
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<td>Cytoskeleton (2)</td>
<td>Ch. 16</td>
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<td>Intracellular vesicular trafficking (1)</td>
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<td>11.</td>
<td>Intracellular vesicular trafficking (2)</td>
<td>Ch. 13</td>
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<td>12.</td>
<td>Cell senescence and aging (recap/discussion)</td>
<td>Ch. 20</td>
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<td>3/18-25</td>
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<td>SPRING BREAK</td>
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</table>
3/27  13. Visualizing Cells I  
    Light microscopy, Fluorescence microscopy, FRET  
Ch. 9

14. Visualizing Cells II  
    Confocal microscopy  
    Use of antibody and radioisotopes  
Ch. 9

15. Manipulating Proteins, DNA, and RNA I  
    Cell Culture, protein purification and analysis  
    Analyzing and manipulating DNA  
Ch. 8

16. Manipulating Proteins, DNA, and RNA II  
    Gene expression and function  
Ch. 8

17. DNA, Chromosomes, DNA transposition  
    Structure and function of DNA  
    DNA transposon and retrotransposon  
Ch. 4, 5

18. From DNA to protein  
    From DNA to RNA  
    RNA world: Small noncoding RNAs and RNAi  
Ch. 6

19. Cell cycle I  
    Overview of the cell cycle  
    Cell cycle control system  
Ch. 17

4/19 Th  

EXAM 3 (Lectures 13-19) (100 points)

20. Cell cycle II  
    Mitosis and Cytokinesis  
Ch. 17

21. Transport b/n the nucleus and the cytosol &  
    Mechanisms of cell communication I  
    Protein import and export  
    Telomeres and telomerase  
    General principles of cell communication  
    GPCR-mediated signaling  
Ch. 12, 15  

22. Mechanisms of cell communication II  
    GPCRs in sensory perception  
    Enzyme coupled cell-surface receptors  
Ch. 15

23. Mechanisms of cell communication III & Apoptosis  
    Regulation of blood glucose level  
    Apoptosis  
    Calcium signaling, NO signaling  
Ch. 15, 18

*24. Mechanisms of cell communication IV & Sustainability  
    Signaling in plants, drought and fresh water scarcity  
Ch. 15, 18

5/8  
Recap/discussion of course material  
Cao,  
Kwak

5/14  
FINAL EXAM (200 pts) (8:00 –10:00 AM) No make up for final.

Quizzes – no make up. For mid-term exams 1, 2 & 3 a valid reason must be provided no later than 7 days after the missed exam. Only one missed exam can be made up.

| Make up exam (Cao) is oral. | Make up for exam 3 (Kwak) is oral. |
Prerequisites
The requirements are: Completion of BSCI105, CHEM131, and CHEM132 (with a grade of “C” or better in each case) or the equivalent. Successful completion of the prerequisite courses has been a good indicator of performance in this course.

LABORATORY SCHEDULE AND ASSIGNMENTS
Policies applicable to the laboratory portion of BSCI330 are posted separately on the course’s Blackboard website. Please familiarize yourself with the details.

Laboratory Manual
The laboratory manual is available online through the course's Blackboard site. Be certain to download and print out the first laboratory exercise prior to the first lab meeting.

COURSE GRADING
Grades will be based on a total number of points rather than on a curve. There will be a maximum of 740 points

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Points</th>
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<tbody>
<tr>
<td>3 exams</td>
<td>100-point/each x 2 on lecture material (Cao)</td>
<td>200</td>
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<tr>
<td></td>
<td>3rd exam 100 pt each (Kwak)</td>
<td>100</td>
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<tr>
<td>1 final exam</td>
<td>200-point comprehensive final exam.</td>
<td>200</td>
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<tr>
<td>lectures #20-25</td>
<td>120 pts (Kwak)</td>
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<tr>
<td>lectures #13-19</td>
<td>30 pts (Kwak)</td>
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<tr>
<td>lectures #1-12</td>
<td>50 pts (Cao)</td>
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<tr>
<td>4 quizzes</td>
<td>Given at beginning or end of lecture, 10 pts/each</td>
<td>40</td>
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<tr>
<td>Lab</td>
<td>Laboratory performance</td>
<td>200</td>
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No adjustments will be made before all grades are in.

GRADE SCHEME (100 % = 740 pts)
A+ = >94.0%  
A   = 90.0–93.9%  
A–  = 88.0–89.9%  
B+  = 85.0–87.9%  
B   = 80.0–84.9%  
B–  = 78.0–79.9%  
C+  = 74.0–77.9%  
C   = 67.0–73.9%  
C–  = 65.0–66.9%  
D+  = 62.0–64.9%  
D   = 55.0–61.9  
F   = <55.0%

POLICIES
Honor Code
The University of Maryland, College Park has a nationally Recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit [http://www.studenthonorcouncil.umd.edu/whatis.html](http://www.studenthonorcouncil.umd.edu/whatis.html).

Academic Dishonesty
Any of the following acts, when committed by a student, shall constitute academic dishonesty:
• **Cheating**: Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.

• **Fabrication**: Intentional and unauthorized falsification or invention of any information or citation in an academic exercise.

• **Facilitating Academic Dishonesty**: Intentionally or knowingly helping or attempting to help another to violate any provision of this Code.

• **Plagiarism**: Intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.

**Missed exams/assignments**
Refer to the Undergraduate Catalog for a complete description of the university’s policy on make-up examinations.

**Use of Wireless Devices**
Wireless phones ringing in class are an annoyance. Thus, phones and other devices that make noise should be silenced during lecture, lab, and exams. Camera phones and text messaging have the potential of being used inappropriately. Students observed using such devices during exams will have their papers confiscated and forwarded to the Office of Judicial Programs for review.

**COURSE EVALUATION**
The university has instituted an online course evaluation system for student input and teaching assessments. The system will be open in May for spring courses and accessible at: [https://www.courseevalum.umd.edu/](https://www.courseevalum.umd.edu/). It is important that we hear from you.

**FOR SUCCESS IN THE COURSE**
Come to class and pay attention
Take good, neat, and complete lecture notes
Go over each day’s lecture notes the same day
Read the textbook of the areas covered
Ask questions before or after class
Participate in a study group, but not for socializing
When you keep up with the material, and discuss it with other student(s) in the course, the material will become very familiar and relatively easy to understand.

**Final Note**
The professors and teaching assistants are dedicated to making this course an enjoyable learning experience, and one primary goal is to provide students with an atmosphere that is conducive to learning and to stimulate students to think independently. Do not hesitate to ask questions or come to us for help. We welcome your input.