BIO 496 Molecular Basis of Disease
Fall 2008 / Walton

BIO 496 Special Topics: Molecular Basis of Disease
Course syllabus

General course information:
Instructor: Dr. Kristen Walton
201 Agenstein Hall
Phone: 816-271-5613
Email: kwalton1@missouriwestern.edu
Office hours: MW 12:00-1:30pm, TR 11:00am-12:00pm, or by appointment

This 3-credit hour course will meet for 3 hours of lecture per week. BIO 496 counts as an upper-division elective in biology. This course is geared toward upper-division biology majors or other advanced students who have a great interest in learning about human diseases. Prerequisite course: BIO 215 Molecular Cell Biology with a grade of "C" or better.

Class website: http://webct.missouriwestern.edu
Course materials, including PPT files for class note-taking and PDF files of assigned readings, will be posted to the course WebCT site. If you are not familiar with using WebCT, contact me as soon as possible for help getting started. Help using WebCT is available at the Instructional Media Center or online at http://www.missouriwestern.edu/IMC/StudentWebCTResources.asp.

Course textbook and materials:
This course incorporates information from multiple subfields of biology, including molecular biology, genetics, cell biology, and physiology. I have not found a "perfect" textbook for this course. Therefore, this course will have one recommended textbook (listed below) for reference and background material in physiology as well as molecular and cell biology. Supplemental readings drawn from primary literature articles and other reading materials will be made available through the course WebCT site or handed out in class.


Course Description
This course will investigate the basic biological causes behind human diseases. Topics will cover a broad spectrum of diseases including single-gene diseases, metabolic diseases, immunological disorders, infectious diseases, cancer, and diseases primarily affected specific organ systems such as endocrine, cardiovascular, neurological, and respiratory diseases. Class time will include a variety of teaching methods, including lecture, discussion, computer-based interactive activities, discussion of case studies, and presentation and analysis of primary literature.

Course Objectives
• Describe causes of selected diseases in molecular, cellular, and physiological terms
• Compare and contrast mechanisms of different diseases
• Describe current treatments for diseases and how they are (in)effective
• Evaluate current experimental procedures and data in disease diagnosis, research, and treatment
• Analyze and assess social aspects and quality-of-life issues of persons with disease

Attendance policy:
Attendance is expected at each class meeting. Information will be discussed in class that is not covered in the reading materials, and you are responsible for information covered and assignments given during classes that you miss. Make-up exams will in general not be given. In an extreme case, consideration may be given
only if you contact the instructor before the exam time. Make-up presentations, assignments, or quizzes will not be available for unexcused absences. Late assignments will be penalized by 10% of the total possible points per weekday late.

Assessment and grading policies
Mastery of course content and objectives will be assessed by exams, assignments and quizzes, presentation of data from selected journal articles or of other assigned materials, and a paper project. Points will be distributed as follows:

- Regular lecture exams 2 x 100 points = 200 pts
- Final exam 150
- Quizzes, assignments, in-class activities 100-200
- Presentations of primary literature, data, or case studies 10 pts each (40 pts maximum)
- Human disease project paper 75

Letter grades for the course will be assigned according to the following:
Total points possible: 565-665 points
Grading scale: 90-100% = A; 80-89% = B; 70-79% = C; 60-69% = D; below 60% = F

Disabilities:
Any student requiring accommodation to perform successfully in the course should see me within the first week of class and arrangements will be made as necessary.

Academic Honesty Policy and Due Process:
Academic honesty is required in all academic endeavors. Violations of academic honesty include any instance of plagiarism, cheating, seeking credit for another’s work, falsifying documents or academic records, or any other fraudulent activity. Violations of academic honesty may result in a failing grade on the assignment, failure in the course, or expulsion from the University. When a student’s grade has been affected, violations of academic honesty will be reported to the Provost or designated representative on the Academic Honesty Violation Report forms. Please see the 2006-07 Student Handbook and Calendar on page 21 for specific activities identified as violations of this policy and the student due process procedure. This handbook is also available online at http://www.missouriwestern.edu/handbook/index.pdf.

Plagiarism is a specific kind of academic dishonesty in which you take another’s ideas or words and claim them as your own. When you draw on someone else’s work, you must indicate the source of that material, whether you are repeating another’s words, argument or thought. Even if you paraphrase another’s work and are not using the exact wording, you are still required to indicate the source of the material. This material must be clearly identified with appropriate citations. If you do not do that, you have plagiarized those materials. Any time you copy and paste any writing that is not your own for an assignment, you must use quotation marks and give the source of that material. If you cut and paste without noting what you have done, you will be guilty of plagiarism. Even if the writing is your own, if it has been used for a previous assignment that should be indicated.

As per the above MWSU policy statement, a violation of academic honesty or plagiarism will result in a zero grade on the assignment or exam. A second violation of academic honesty or plagiarism may result in failing the course.
### Schedule of topics (tentative and subject to change):

<table>
<thead>
<tr>
<th>Week beginning:</th>
<th>Topics</th>
<th>Reference reading in Vander text</th>
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</thead>
<tbody>
<tr>
<td>8/25/08</td>
<td>Disease classification and epidemiology, basics of pharmacology, common research techniques, human subjects research ethics</td>
<td>Review materials from Ch 2, 3, 4, and 5 as needed</td>
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<tr>
<td>9/1/08</td>
<td>Single-gene disorders (cystic fibrosis, sickle cell anemia, Duchenne muscular dystrophy, etc) (Labor Day, no class 9/1)</td>
<td>Ch 13 p443-454, Ch 12 p425-428, Ch 13 p463-465</td>
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<tr>
<td>9/15/08</td>
<td>Cancer (cont)</td>
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<tr>
<td>9/22/08</td>
<td>Endocrine disorders (diabetes, etc)</td>
<td>Ch 16 p567-580</td>
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<tr>
<td>9/29/08</td>
<td>EXAM 1 (Mon. 9/29/08) Neurological diseases (Parkinson's disease, Alzheimer's disease, depression, etc)</td>
<td>Ch 16 p583-590, Ch 11 p351-356</td>
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<tr>
<td>10/6/08</td>
<td>Neurological diseases (cont) Reproductive disorders (infertility) (Fall break, no class 10/10)</td>
<td>Ch 17 p615-625, 639, Ch 18 p647-651</td>
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<tr>
<td>10/13/08</td>
<td>Immune system disorders (inflammation, AIDS, autoimmunity, etc)</td>
<td>Ch 18 p654-668, 671, Ch 18 p675, Ch 9 p264-266, 280</td>
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<tr>
<td>10/20/08</td>
<td>Immune system disorders (cont) Metabolic disorders (obesity, osteoporosis, etc.)</td>
<td>Ch 10 p297-298, 304-307, Ch 6 p138-139, 155-158</td>
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<tr>
<td>10/27/08</td>
<td>Metabolic disorders (cont) EXAM 2 (Fri. 10/31/08)</td>
<td>Ch 6 p166-171, Ch 8 p243-247</td>
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<tr>
<td>11/3/08</td>
<td>Cardiovascular diseases (hypertension, atherosclerosis, etc)</td>
<td>Ch 16 p580-582, Ch 12 p360-364, 419</td>
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<tr>
<td>11/10/08</td>
<td>Cardiovascular disease (cont) Gastrointestinal diseases (inflammatory bowel diseases, peptic ulcers, etc)</td>
<td>Ch 12 p365-372, Ch 15 p529-536, 560</td>
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<tr>
<td>11/17/08</td>
<td>Gastrointestinal diseases (cont) Respiratory diseases (asthma, emphysema, etc)</td>
<td>Ch 15 p545-548, 557-559, Ch 13 p452-454, 477</td>
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<tr>
<td>11/24/08</td>
<td>Respiratory diseases (cont). (Thanksgiving, no classes 11/26 and 11/28)</td>
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<td>12/1/08</td>
<td>Topics to be announced, based on student input</td>
<td>TBA</td>
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The final exam will be given during the scheduled final exam period (8:30-10:20am, Wednesday, Dec. 10th). It will cover new material covered since exam 2, and will also include a comprehensive section.