Tentative Course Outline  
Biochemical Pharmacology 4Q03  
2011-2012

Instructor: Dr. Radhey S. Gupta, Office-HSC-4H2, Ext. 22639  
Email: gupta@mcmaster.ca

Hours: Monday, Wednesday and Thursday from 10:30-11:20

Location: T13-125

Instructor Contact: Students are encouraged to ask questions in the class. I am also available to  
answer questions after the class; Additionally, I am also generally available on a drop-in-basis  
when I am in my office. However, it would be helpful to make an appointment by email to make  
sure that I am in my office when you drop by, and not busy at that particular time.

Teaching Assistants:

H. Sohail Naushad, Hsc-4H2, Ext. 22178; Email: naushahs@univmail.cis.mcmaster.ca  
Vaibhav Bhandari, Hsc-4H2, Ext. 22178; Email: bhandav@univmail.cis.mcmaster.ca

Course Objectives

The objective of this course is to familiarize students with some basic concepts of Pharmacology  
and to introduce them to the working of a broad range of chemotherapeutic drugs (e.g.  
Antibacterial, Antiviral, Antifungal and Anticancer drugs) as well as some toxins. The main  
emphasis of this course will be on learning about the mechanisms of action of the above groups  
of drugs and how cellular resistance to them develops. Some applications of the drug-resistant  
mutants as tools for genetic, biochemical and cell biological studies will also be described.

Textbook:

There is no prescribed textbook for the course. However, for about 20-25 % of the material  
covered in this course, Pharmacology 3rd Edition (Lippincott's Illustrated Reviews) by Richard  
D. Howland and Mary J. Mycek, Published by Lippincot Williams & Wilkins, is a good source.  
Hence, this book is recommended. Some other books that are useful for the material covered in  
this course are:

   Press.
4. Assorted Scientific Articles. Information for these will be posted on the Learn Link.  
   Some copies of these books may be available the Health Sciences Library.
EVALUATION

Student evaluation will be based on two tests and a final examination. The tests will be held during the class period whereas the final exam will be scheduled by the Registrar's office. The tests and exams will be in the form of short problems/essays based upon material covered in class. The times and dates for the tests are given below.

<table>
<thead>
<tr>
<th>Test #1</th>
<th>Wednesday October 19, 2011</th>
<th>20%</th>
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<tbody>
<tr>
<td>Test #2</td>
<td>Wednesday November 23, 2011</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>Date and time to be announced later</td>
<td>60%</td>
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Course Policy Regarding Missed Tests

Using the McMaster student absence form (MSAF), undergraduate students can report absences of up to two missed tests (or course work) per academic term and can request that allowance be made for them. The submission of medical or other supporting documentation is normally not required. However, students must immediately follow up with the instructor to inform of the missed tests. For any missed test that fall within the allowable category, the marks for the missed test will be added to the final examination, increasing the overall weight of the final exam. For example, if you missed one test that is worth 20% of the total marks, your final exam instead of 60% will account for the 80% of the overall marks for the course. Please note that the above mechanism for reporting absence does not apply to the Final Examination.

For any reason that extends beyond the above, the student can petition the Associate Dean’s office with supporting documentation. The Associate Dean’s office will either send an ‘approved’ or ‘discretionary’ note to the course instructor. A ‘discretionary’ note means that the student did not have a valid reason to miss the work. If you missed the test for "an Approved reason", its marks will be added to the final exam. However, for any "Discretionary" note received from the Associate Dean’s office, no allowance will be made.

Academic Ethics: Students are asked to reread two documents provided on registration, the Senate Statement on Academic Ethics and the Senate Resolution on Academic Dishonesty. Students should be sure that they understand the expectations the University has of its scholars, and the possible consequences when these expectations are not met.

Academic dishonesty including copying from others or using unauthorized aids in tests and examination will generally have serious consequences such as failure of the course and a notation on the transcript reading "Grade of F assigned for academic dishonesty. It could also result in suspension from the University. Hence, it is your responsibility to understand what constitutes academic dishonesty.
# Topic Covered

<table>
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<tr>
<th>Lectures</th>
<th>Course Content</th>
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<tr>
<td>6-8 Lectures</td>
<td>Course Introduction, Basic Concepts in Pharmacology, Drug-receptor interaction, Pharmacodynamics and Pharmacokinetics</td>
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| 8-10 Lectures | General Principles of Drug Therapy: Overview of Drug resistance; Mechanisms of action and cellular resistance to Antibacterial Drugs  
(a) Inhibitors of Bacterial Cell wall synthesis (Penicillin, Cephalosporin, Carbapenam, Vancomycin) Structure of bacterial cell wall;  
(b) Inhibitors of protein synthesis (tetracycline, streptomycin, erythromycin, chloramphenicol etc.).  
© Origin of drug resistance and mechanisms responsible for its spread in the population.  
Antimetabolites and other classes of antibacterial drugs (quinolones, antimycobacterial drugs, methenamine). |
| 8-10 Lectures | General principles of cancer chemotherapy; Mechanisms of action and cellular resistance to different classes of anticancer drugs (purine and pyrimidine analogs, antimitotic drugs, DNA intercalating agents, alkylating agents, methotrexate, etc.). Multidrug phenotype and its genetic and biochemical basis. Resistance involving gene amplification. Genetic and biochemical characteristics of gene amplification mutants.  
Selection of drug-resistance mutants in mammalian cells and their application for Genetic and Biochemical studies- Studies with mutants resistant to Podophyllotoxin and Etoposide. |
| 4-5 Lectures | Mechanism of action and cellular resistance to antiviral drugs. Importance of purine and pyrimidine salvage pathway enzymes in genetic and biochemical studies. |
| 1-2 Lectures | Mechanism of action and cellular resistance to bacterial toxins (cholera toxin, diphtheria toxin). |

Note: The topics indicated above and the numbers of lectures on each topic are tentative and they may change as deemed necessary.

The instructor and the university also reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes."