# University of Detroit Mercy School of Dentistry

Department of Biomedical Sciences
Course Syllabus

# Pharmacology I
# DBS 822

## Course Information

Web Address: http://knowledge.udmercy.edu

**Course Directors:**

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|---|---|
| W.C. Foong, B.Sc. (Hons); Ph.D.<br>Office: 241 Manning Hall<br>Office Hours by appointment or contact<br>Carol Grennan, Administrative Assistant.<br>Phone:313-494-6631<br>Email: foongwc@udmercy.edu. | |

**Fall Term , 2007**
DS2 Students (Class 2010)
**St Clair**, Friday mornings, 8:00 – 10:00

**Credit Hours:** 2.0
**Prerequisites:** Physiology

## Lecturers/Support Faculty

**Lecturers:**
W.C. Foong, B.Sc.(Hons), Ph.D

**Preclinical/Clinical Faculty:**

NA

## Academic Policies:

All policies in the School of Dentistry Academic Policies Handbook including but not limited to academic integrity, mandatory attendance, professional decorum & dress code, identification (ID) badges, preclinical and classroom decorum, use of cell phone and electronic devices, examination policies and exam/quiz absences apply.

## Accommodations:

If you would like to request a classroom, testing, preclinical, clinical, or other accommodation because of a legally protected disability, or if you might require any special assistance in the event of an emergency or evacuation, please contact the University of Detroit Mercy's Office of University Academic Services (UAC) at 313-578-0310 or email your request for information to gallegem@udmercy.edu

## Student Evaluation of Instruction

Student feedback is valued by the faculty and the administration. All students are required to complete the School of Dentistry's on-line course evaluation by a specified date. Failure to comply by posted deadline dates will result in the receipt of an F (Failing) grade of record for the Evaluation Responsibility Course. Only constructive, professional recommendations will be reported and considered.

## Course Description

**Purpose of the course:**
This course will provide a framework and fundamental understanding of how drug acts and how the body "handles" the drug. The fundamental basis of therapeutics, pharmacodynamics and pharmacokinetic factors governing drug utilization, their desired and adverse will be introduced. These concepts and principles will be reinforced for all drug classes covered in the course. In addition, the mechanism of action, the clinical applications and an overview of the therapeutic and adverse actions, precautions, contraindications and interactions of drugs for each major drug category/class and their implications to dental patient management will be discussed.

**Course Goals:**
This course will introduce the student:

- the fundamental principles and concepts in pharmacology and therapeutics
- the integration of biomedical sciences with pharmacology and highlight their applications in clinical dentistry
- the principles of autonomic pharmacology and their applications in clinical dentistry.
- the pharmacology of cardiovascular and renal drugs and highlight their implications to dental patient management.

- the concept of selective toxicity, antimicrobial therapy and their applications and implications in clinical dentistry.

**Course Objectives:**
At the conclusion of the course, the dental student will be able to:

1. Describe the specific knowledge related to the different classes of drugs, and important distinctions among members of each class, in relation to the organ systems they affect, and the diseases for which they are used therapeutically.
2. Describe the basic principles governing pharmacodynamics, receptor theory, principles of structure-activity relationships of drugs
3. Explain the difference among the receptor-mediated effects of therapeutic agents utilizing the terms: agoinst, competitive antagoinst, non- competitive antagoinst, negative antagoinst, partial agoinst and inverse agoinst and classify each drug considered in one of these categories.
4. Explain the following terms and concepts: graded and quantal dose response curves, drug clearance, Tmax, Cmax, AUC, therapeutic index, therapeutic window/range, first and zero order kinetics, loading dose, maintenance dose and half-life of a drug.
5. Describing the physiochemical characteristics of drugs which determine the pharmacokinetics profile a drug (Absorption, Distribution, Metabolism and Excretion) how they influences the actions of therapeutic agents
6. Describe the Development, Evaluation and Control of Drugs: Preclinical development, clinical trails (Phase I to III); FDA requirements for efficacy and safety; NDA, IND, LD50, ED50, DEA Classification (Scheduling) of drugs with addiction potential, describe the anatomy of and able to write prescriptions.
7. Decribe the Post-Marketing Surveillance of Drugs. Adverse drug reaction reporting mechanism. Problems with subpopulations such as children, the elderly, the mentally impaired, pregnant or lactating women. Limitations of statistical analysis.
8. Establish a foundation on which to build a rational approach to the use of drugs in clinical practice and explain the mechanisms of drug interaction: drug-drug, food-drug, herbal-drug and pharmaceutical drug interactions, providing clinical examples.
9. Explain the concept of selective toxicity and describe the mechanism of action of antimicrobial agents, their adverse effects, drug interactions and clinical applications
10. Describe the mechanism of action of adverse effects, drug interactions, precautions, clinical applications and dental significance of autonomic drugs, cardiovascular and renal drugs and antimicrobial agents.

**Instructional Methods:**
The primary instructional method is via didactic teaching with web links an selected journal articles provided via the course web site. Relevant clinical cases will be introduced to illustrate the clinical uses and implications of each class of drugs

**School of Dentistry Competencies**

**Competency-based Education:** Assumes that learning to become an entry-level professional is a progression through stages from novice to competent.

**Stages of Progression to Competence:**
**F or Foundation Knowledge:** Basic knowledge, skills, and attitudes needed to begin the journey to competence.

**N or Novice Level:** Ability to articulate or describe the appropriate skills, knowledge, and professional attitudes. Novices need structure, clarity of goals, single and clearly explained approaches.

**B or Beginner Level:** Combines the appropriate skills, knowledge, and professional attitudes, all of which are performed with guidance and correction.

**C or Competent Level:** Combines the appropriate supporting skills, knowledge, and professional attitudes, all of which are performed reliably without assistance.

| | Competencies of the Graduating Dental Student | Addressed | Evaluated | Method |
|---|---|---|---|---|
| **1.** | The graduating student obtains, records, updates and organizes accurate and completed medical/dental histories including pertinent psychological and socioeconomic information. | YES | F | Written Evaluation<br>NA<br>NA |
| **2.** | The graduating student performs, records and organizes a physical assessment appropriate for dental care. | NO | NO | NA<br>NA<br>NA |
| **3.** | The graduating student determines differential, provisional or definitive diagnoses by correlating and interpreting examination and assessment findings. | NO | NO | NA<br>NA<br>NA |
| **4.** | The graduating student develops alternative treatment plans which are sequenced to address the chief complaint, eliminate oral disease, restore function, and maintain health, and prevent oral disease consistent with assessment and diagnoses. | NO | NO | NA<br>NA<br>NA |
| **5.** | The graduating student establishes with the patient a mutually acceptable treatment plan. | YES | F | NA<br>NA<br>NA |
| **6.** | The graduating student monitors and provides for patient comfort associated with dental care. | YES | F | Written Evaluation<br>NA<br>NA |
| **7.** | The graduating student delivers and/or manages the planned treatment in sequence and in accordance with accepted standards of care. | YES | F | Written Evaluation<br>NA<br>NA |
| **8.** | The graduating student promotes health maintenance and disease prevention. | NO | NO | NA<br>NA<br>NA |
| **9.** | The graduating student applies the principles of infection control and environmental safety. | NO | NO | NA<br>NA<br>NA |
| **10.** | The graduating student makes professional decisions | NO | NO | NA |

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|---|---|---|---|---|
| | affecting the practice of dentistry based on values that satisfy legal and ethical principles and service to society. | | | NA<br>NA |
| **11.** | The graduating student performs routine self evaluation. | NO | NO | NA<br>NA<br>NA<br>NA |
| **12.** | The graduating student applies business and practice management skills. | NO | NO | NA<br>NA<br>NA<br>NA |
| **13.** | The graduating student demonstrates interpersonal skills to function successfully in a multicultural work environment. | NO | NO | NA<br>NA<br>NA<br>NA |
| **14.** | The graduate critically evaluates the validity of new information, new products, and/or techniques and their relevance to the practice of dentistry. | YES | F | Written Evaluation<br>NA<br>NA |

## Course Policies

- Students must be familiar with appropriate School of Dentistry policies including but not limited to professional decorum, dress code, identification badges, and examination protocol).
- Students are responsible in accessing the course Blackboard sites for class announcement, grades, course documents and additional websites/links or electronic resources.
- Attendance is mandatory.
- Required textbook and other readings are mandatory. At each lecture, the instructor will provide notes, handouts or PowerPoint handouts. These notes and handouts do not take the place of your textbook, but they allow you to ensure your classroom notes are complete
- All students must follow examination protocols as outlined in the student handbook and as prescribed by the course director for all examinations and quizzes. Failure to follow the prescribed protocol may result in a failing grade on the examination and/or the registration of an academic misconduct complaint with the Academic Administration. Academic integrity is a very serous issue that reflects on your fitness to practice your chosen profession.
- EXCUSED ABSENCES is when student absences is due to health, bereavement in the family or for exceptional reasons approved by both the Executive Associate Dean (Academic Affairs) and the course director. Students **must inform** both the Dean's Office and the course director (via email) on the precise day and dates for their excused absences.
- Students are expected to turn off their cell phones during class and exams.
- All electronic device must be turn off during examinations.
- Students late for examinations: Students are not permitted to take the examinations 30 minutes after the start of the examinations. No additional time will be provided to students arriving late for examinations.
- Tablet PC utilization expectations e.g. prior to class meeting, downloading of handouts, utilization during the lecture including inappropriate use)

## Textbook and Resource Materials

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|---|---|
| **Required textbook:** | **Pharmacology and Therapeutics for Dentistry,** John A. Yagiela, Frank J. Dowd and Enid A. Neidle Mosby, Inc., St. Louis, MO. 5th edition, 2004. |
| Reserved materials: | Physician Desk Reference (2006)<br>ADA Guide to Dental Therapeutics 2nd edition |
| **WEB SITES:** | Blackboard - Dental Pharmacology<br>http://www.fda.gov/medwatch/<br>http://www.aspet.org/AMSPC/Knowledge_Objectives/default.asp<br>http://www.nlm.nih.gov/medlineplus/druginformati |

on.html (Drug information on drugs marketed in the USA)
http://www.emedicine.com

**Suggested supplementary materials:**

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| **Textbooks:** | Principles of Pharmacology: The pathophysiologic Basis of Drug Therapy. Golan, DE et al., Lippincott Williams & Wilkins, 2004.<br>**Pharmacology 3rd edition –** Lippincott's Illustrated Reviews. Howland RD and Mycek MJ. Lippincott Williams & Wilkins, 2006. |
| **Journal articles:** | see each unit and Blackboard posting |
| **AdditionalWeb sites:** | see each unit and Blackboard posting. |

## Evaluation and Grading

A. Quizzes and examinations will be composed of true/false, multiple choices question with one **MOST APPROPRATE** answer, multiple-multiple and/or short answer questions. Questions will be drawn from the assigned readings and the lecture material.
B. There will three exams: Examination #1; Examination#2 and Final Exam.
C. **Scheduled short quizzes and Unscheduled quizzes** will be administered. There will be **NO make-up quizzes permitted.**
D. All quiz grades will be averaged into the final grade computation.
E. Final grades will be computed from the percentage of each exams (1, 2 and 3) and quiz grade (see table below).

### Grading Scale

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|---|---|
| **A** | =94-100% |
| **A-** | =90-93% |
| **B+** | =87-89% |
| **B** | =83-86% |
| **B-** | =80-82% |
| **C+** | =77-79% |
| **C** | =73-76% |
| **C-** | =70-72% |
| **D** | =60-69% |
| **F** | =below 60% |
| **W** | Withdraw, no credit |
| **I** | Incomplete, a temporary grade not of record |

### Course Grade Components

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|---|---|
| Quizzes | 4% |
| Examination #1 | 32% |
| Examination #2 | 32% |
| Final Examination | 32% |

Total 100%

**Course Evaluation Methods**

**Quizzes**

- Questions will be composed of true/false, multiple choices question with one **MOST APPROPRATE** answer, multiple-multiple and/or short answer questions. Questions will be drawn from the assigned readings and the lecture material.
- **Scheduled short quizzes and Unscheduled quizzes** will be administered. There will be **NO make-up quizzes permitted.**
- All quiz grades will be averaged into the final grade computation.

**Examination #1 and 2**

- Questions will be composed of true/false, multiple choices question with one **MOST APPROPRATE** answer, multiple-multiple and/or short answer questions. Questions will be drawn from the assigned readings and the lecture material.

**Final Examination**

- Questions will be composed of true/false, multiple choices question with one **MOST APPROPRATE** answer, multiple-multiple and/or short answer questions. Questions will be drawn from the assigned readings and the lecture material.

## COURSE SCHEDULE

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DBS 822 Pharmacology (Graduating Class 2010)
Fridays: 8:0 AM to 10:00 AM (2 hours)*
**Room: St Clair**

| DATE | TOPICS | LECTURERS | READINGS/ASSIGNMENTS |
|---|---|---|---|
| Aug 17, 2007 | Course Syllabus &Outline:<br>**Basic Principles:**<br>Pharmacodynamics | **Dr Foong** | **Chapters 1 to 4** |
| Aug 24, 2007 | **Basic Principles:**<br>Pharmacokinetics | **Dr Foong** | **Chapters 1 to 4** |
| Aug 31, 2007 | **Basic Principles:**<br>Pharmacokinetics<br>Pharmacotherapeutics | **Dr Foong** | **Chapters 1 to 4** |
| Sept 7, 2007 | Basic Principles:<br>Pharmacotherapeutics<br>Pharmacogenetics<br>Recording Patient's Medication History | **Dr Foong** | **Chapters 1 to 4** |
| Sept 14, 2007 | **Exam 1 (1.5 hr) 8:00 AM to 9:30 AM** | **Dr Foong** | |
| Sept 21, 2007 | Prescription Writings | **TBA** | **Chapters 55** |
| Sept 28, 2007 | Autonomic Pharmacology | **Dr Foong** | **Chapters 5 to 10** |
| Oct 5, 2007 | Autonomic Pharmacology | **Dr Foong** | **Chapters 5 to 10** |
| Oct 12, 2007 | Autonomic Pharmacology | **Dr Foong** | **Chapters 5 to 10** |
| Oct 19, 2007 | Cardiovascular & Renal Pharmacology | **Dr Foong** | **Chapters 24 to 28** |
| Oct 26, 2007 | **Exam 2 (1.5 hr) 7:40 AM to 9:10 AM**<br>Cardiovascular & Renal Pharmacology<br>**9:15 AM to 10:00)** | **Dr Foong** | **Chapters 24 to 28** |
| Nov 2, 2007 | Cardiovascular & Renal Pharmacology | **Dr Foong** | **Chapters 24 to 28** |
| Nov 9, 2007 | Antimicrobial Agents | **Dr Foong** | **Chapters 38 to 40** |
| Nov 16, 2007 | Antimicrobial Agents | **Dr Foong** | **Chapters 38 to 40** |
| Nov 23, 2007 | **Thanksgiving** | | |
| Nov 28, 2007 | Antimicrobial Agents | **Dr Foong** | **Chapters 38 to 40** |

**The Final Examination will be given during the Final Exam Period and the date will be announced.**