MCB 466 Integrative- & Neuro-Pharmacology (SP2025)

Information and Policies

The aim of this course is to teach advanced undergraduate and graduate students in life sciences the fundamental principles of pharmacology. This course will provide a comprehensive understanding of the principles and concepts applied to modern pharmacology, including pharmacokinetics, pharmacodynamics, neuropharmacology, toxicology, drug development and clinical trials, and drugs targeting various diseases. Emphasis is placed on the mechanisms of action. The course will cover several classes of drugs, including anti-infective agents, autonomic/central nervous system modulators, neuropharmacology, anti-cancer therapeutics and drugs targeting the major organ systems of the body. In an active learning style, case studies and sample MCAT questions will be used to bring relevance to covered topics. This course is ideal for those interested in pharmacology, neuropharmacology, pharmacy, medicine, veterinary medicine, nursing, kinesiology, or graduate school in the life sciences.

Student Learning Outcomes:
After completion of this course, students will have gained an understanding of:
1) General concepts in pharmacology: pharmacokinetics, pharmacodynamics, ligand-receptor interactions, neuropharmacology and pharmacology of organ systems.
2) Physiological basis for how different classes of drugs work
3) drug classes impacting different diseases or organ systems
4) Drug development, toxicology and therapeutic windows, and clinical trials

Pre-requisites: MCB 252 and MCB 354

Textbook: Rang and Dale's Pharmacology (9^{th} Edition) (Elsevier)

Lecture Time: Tuesdays and Thursdays for 80 min, except for University-designated holidays. Time is 9:30AM

Lecture location: 112 Gregory Hall

Grading: Your FINAL GRADE will be in letter grade (with plus/minus). It will be determined by your mean performance as weighted below:

- Exam 1: 100 points
- Exam 2: 100 points
- Exam 3: 100 points
- Final Exam: 100 points
- iClicker: 1.5 point per class, up to a total of 30 points for participation throughout the semester
- Assignment 1: 35 points
- Assignment 2: 35 points
- Total points above 450 or in the top fourth of the class guarantees an A, scoring above 400 points or in the top half of the class guarantees a B.

Other Information:

- See the HOMEPAGE (https://canvas.illinois.edu/courses/54194) to obtain a copy of the lecture notes/outlines.
- ATTENDANCE of lectures is required. Announcements made in class are considered official.
- In the event of ABSENCE from class, a documented excuse must be presented to obtain credit for clicker questions for that day. The instructor may request verification from the Emergency Dean. More than 3 excused absences will only be allowed at the discretion of the instructor.
- To request DRES ACCOMMODATIONS, please send Dr. Nelson or Dr. Tsai a Letter of Accommodation (LOA) before February 1st.
- **Exams will occur during class time.**
- Exams will not specifically test material covered on previous exams. However, some material requires working knowledge of concepts covered in other sections of the class.
- MAKEUP EXAMS will be given in case of illness or other emergency. A letter from health care practitioner is MANDATORY. The student must contact the course coordinator (Dr. Nelson or Dr. Tsai)

within 48 hours of the scheduled exam. No exceptions would be made if the student fails to notify him within this period.

- If there is a CONFLICT with the scheduled final exam, the student must inform Dr. Nelson or Dr. Tsai at least 10 days prior to the exam date.
- **iClicker**: Each student remote has a unique serial number printed on the back. This number is referred to as the clicker ID. You must register your clicker ID in order to receive credit for voting in class (i.e., participation and performance in pop quizzes). To register, go to www.iclicker.com, click on REGISTER and enter your personal information (use your UIN in the Student ID field) and iClicker ID.
- The course coordinator reserves the right to make necessary adjustments to the policies and to grading in order to meet learning objectives.

Instructors

Faculty	Office Phone	Office Address	Email Address
Dr. Erik Nelson*	244-5477	523A Burrill Hall	enels@illinois.edu
Dr. Nien-Pei Tsai	244-5620	423A Burrill Hall	nptsai@illinois.edu

* = course coordinator

Lectures

1/21 Introduction and Principles of Drugs [Tsai]
1/23 Pharmacokinetics and Pharmacodynamics [Tsai]
1/28 Antibacterial Agents [Tsai]
1/30 Toxicology [Nelson]
2/4 Antifungal, Antiprotozoal and Anthelmintic Agents [Tsai]
2/6 Antiviral Agents and Review [Tsai]
2/11 **Exam 1**
2/13 Autonomic Nervous System and Drugs [Tsai]
2/18 Neurotransmitters [Tsai]
2/20 Anti-Inflammatory and Immune-Suppressants [Nelson]
2/25 Neurodevelopmental and Neurodegenerative Disorders and Drugs [Tsai]
2/27 Anesthetics and Analgesics [Tsai]
3/4 Antidepressants, Anxiolytics and Antipsychotics [Tsai]
3/6 Anticonvulsants, Drugs for Migraine and Insomnia, Drugs of abuse [Tsai]
3/11 Muscle Diseases and Neuropharmacology Review [Tsai]
3/13 **Exam 2**
3/15-3/23 - **Spring Break - No Classes**
3/25 Pulmonary System and Drugs [Tsai]
3/27 Cardiovascular [Nelson]
4/1 Metabolic 1 - Hypertension and Oedema [Nelson]
4/3 Metabolic 2 - Atherosclerosis [Nelson]
4/8 Metabolic 3 - Blood Glucose Control [Nelson]
4/10 Metabolic 4 - Obesity [Nelson]
4/15 **Exam 3**
4/17 Clinical Trials and Drug Development [Nelson]
4/22 Jumble – you ask, I answer [Nelson]
4/24 Reproductive System and Fertility [Nelson]
4/29 Bone Metabolism and Osteoporosis [Nelson – lecture recording will be made available]
5/1 Cancer I - Introduction and Conventional Cytotoxic Approaches [Nelson]
5/6 Cancer II - Targeted Therapeutics, Biologics and Immune Therapy [Nelson]
5/9 - 5/15 **Final exam to be scheduled by registrar**