

# MCB 466 Integrative- & Neuro-Pharmacology (SP2022)

## 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:

Required Textbook: Rang and Dale's Pharmacology (9<sup>th</sup> Edition) (Elsevier)

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

**Lecture location:** 140 Burrill 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: 20%
- Exam 2: 20%
- Exam 3: 20%
- Final Exam: 20%
- iClicker
  - up to 5% for participation throughout the semester
- Assignment 1: 7.5%
- Assignment 2: 7.5%

- The final letter grade will be given as the following:
  - 93.4% - 100% A+
  - 90.0% - 93.3% A
  - 86.7% - 89.9% A-
  - 83.4% - 86.6% B+
  - 80.0% - 83.3% B
  - 76.7% - 79.9% B-
  - 73.4% - 76.6% C+
  - 70.0% - 73.3% C
  - 66.7% - 69.9% C-
  - 63.4% - 66.6% D+
  - 60.0% - 63.3% D
  - Below 60.0% F

#### **Other Information:**

- See the HOMEPAGE (through Canvass, <https://canvas.illinois.edu>) 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 ensure that disability-related concerns are properly addressed from the beginning, students with disabilities who require assistance to participate in this class are asked to contact Dr. Nelson/Tsai as soon as possible. To request DRES ACCOMMODATIONS, please send Dr. Tsai/Nelson a Letter of Accommodation (LOA) before February 1st.
- With the exception of the Final Exam, 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. Tsai/Nelson) within 48 hours of the scheduled exam. No exceptions will 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. Tsai/Nelson 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](http://www.iclicker.com), click on REGISTER and enter your personal information (use your UIN in the Student ID field) and iClicker ID.

#### **Academic Integrity:**

It is the responsibility of each student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions.

## Instructors

Faculty	Office Phone	Office Address	Email Address
Dr. Erik Nelson*	244-5477	523A Burrill Hall	<a href="mailto:enels@illinois.edu">enels@illinois.edu</a>
Dr. Nien-Pei Tsai	244-5620	423A Burrill Hall	<a href="mailto:nptsai@illinois.edu">nptsai@illinois.edu</a>

\* = course coordinator

## Lectures

1/18/2022 Introduction and Principles of Drugs [Tsai]

1/20/22 Pharmacokinetics and Pharmacodynamics [Tsai]

1/25/22 Toxicology [Nelson]

1/27/22 Antibacterial Agents [Tsai]

2/1/22 Antifungal, Antiprotozoal and Anthelmintic Agents [Tsai]

2/3/22 Antiviral Agents and Review [Tsai]

2/8/22 **Exam 1**

2/10/22 Autonomic Nervous System and Drugs [Tsai]

2/15/22 Neurotransmitters [Tsai]

2/17/22 Anti-Inflammatory and Immune-Suppressants [Nelson]

2/22/22 Neurodevelopmental and Neurodegenerative Disorders and Drugs [Tsai]

2/24/22 Anesthetics and Analgesics [Tsai]

3/1/22 Antidepressants, Anxiolytics and Antipsychotics [Tsai]

3/3/22 Anticonvulsants, Drugs for Migraine and Insomnia, Drugs of abuse [Tsai]

3/8/22 Muscle Diseases and Neuropharmacology Review [Tsai]

3/10/22 **Exam 2**

3/12/22-3/20/22 - **Spring Break - No Classes**

3/22/22 Pulmonary System and Drugs [Tsai]

3/24/22 Cardiovascular [Nelson]

3/29/22 Metabolic 1 - hypertension and oedema [Nelson]

3/31/22 Metabolic 2 - atherosclerosis [Nelson]

4/5/22 Metabolic 3 - Blood Glucose Control [Nelson]

4/7/22 Metabolic 4 - Obesity [Nelson]

4/12/22 **Exam 3**

4/14/22 Gastrointestinal Tract [Nelson]

4/19/22 Endocrine Targets (pituitary, adrenal, thyroid) [Nelson]

4/21/22 The Reproductive System and Fertility [Nelson]

4/26/22 Bone Metabolism and Osteoporosis [Nelson]

4/28/22 Cancer I - Introduction and Conventional Cytotoxic Approaches [Nelson]

5/3/22 Cancer II - Targeted Therapeutics, Biologics and Immune Therapy [Nelson]

5/6/22 - 5/13/22 **Final exam to be scheduled by registrar**