Expanded Course Description

Course Title and Academic Credits

Medicinal Chemistry I  30:715:409   3 credits

Mode of Instruction

Lecture

Course Prerequisites

01:160:307 or 315, 01:160:308 or 316 and 30:715:306

Catalog Course Description

Study of organic medicinal and pharmaceutical compounds, with special emphasis on the correlation of structural and physiochemical properties with biological activity.

Learning Goals of Course

- Understand the effects of chemical bonding on the shape of drug molecules
- Identify functional groups within drug molecules and understand their effects on acid-base properties and partition coefficients
- Estimate the relative acidity and/or basicity of drug molecules and the extent to which the molecules will exist in an ionized state at various pH levels
- Derive the correct chemical structure of a drug molecule from its systematic name
- Determine how functional groups within a drug molecule affect its relative water or lipid solubility
- Understand the difference between stereoisomers and conformation and how they affect drug structure
- Recognize the structural requirements for compounds that have agonist and antagonist activity at cholinergic receptors and understand the pharmacologic implications of such activity
- Recognize the structural requirements for compounds that have agonist and antagonist activity at adrenergic receptors and understand the pharmacologic implications of such activity
- Understand the structure-activity relationships for drugs that block calcium channels
- Understand the structure-activity relationships for ACE inhibitors
- Understand the structure-activity relationships for diuretics
- Understand the molecular basis for antihypertensive activity
- Understand the structural basis for anti-arrythmic activity
- Understand the structure and function of cardiac glycosides
- Understand the relationship between chemical structure and cholesterol lowering
activity

- Understand the structure-activity relationships of antihistamines
- Understand the structure-activity relationships of drugs for treating gastric ulcers

**Required and Recommended Course Materials**

- *Foye’s Principles of Medicinal Chemistry, Sixth Edition*, By Thomas L. Lemke and David A. Williams, Lippincott Williams & Wilkins, 2008
- *Medicinal Chemistry Class Notes Handout*
- *Optional Resource: ChemDraw Ultra 12.0* 

**Policies for Exams, Assignments, Attendance and Grading**

**Grading:** In addition to the examinations, there may be **ANNOUNCED OR UNANNOUNCED QUIZZES** throughout the semester, worth up to 10% of your semester grade. All quizzes will be based on important concepts discussed in class as well as on the reading assignments from the handout and textbook. **Make up quizzes are not given.** Attendance is mandatory! Students are expected to be in class and ready for lecture at the scheduled time. Grades in medicinal chemistry are based soley on the numerical average of your tests and quizzes and are not curved. **Grades:** A, 100-90; B+, 89-85; B, 84-80; C+, 79-75; C, 74-70; D, 69-60; F, <60.

**Absence From Class:** Students are expected to attend all classes; if you expect to miss one or two classes, please use the University absence reporting website [https://sims.rutgers.edu/ssra/](https://sims.rutgers.edu/ssra/) to indicate the date and reason for your absence. An email is automatically sent to the faculty coordinator.

**Exams:** Have student ID or photo drivers license face up on desk during exams. Calculators, PDAs, cell phones, pagers, portable radios, etc may not be used during exams. When you enter the exam room you are to **TURN OFF** all cell phones and pagers and you may not have them on your person during the exam. Textbooks, notes, and handouts may **NOT** be opened once you enter the exam room. Come prepared with 2 or 3 pens or pencils – but regrading of any answers written in pencil will not be allowed. You may not ask any questions during the exam. If you wish to dispute something on the exam write a note in the margin. When the announcement to “put your pencils or pens down” is made you must **immediately stop writing.** If you continue to write your exam may not be accepted or you might lose points. When it is announced in class that your exams may be picked up you will have 7 calendar days to submit it for regrading. **No regrading of any exam for any reason will be done after 7 days.**

**Faculty Contact Information**

Professor Edmond LaVoie, 732-445-2674

**Link to any course website that has additional useful information**