Introduction to Medicinal Chemistry
PHAR 7203
Spring Semester 2025

Course Description
This course focuses on introducing medicinal chemistry concepts and few major drug classes to pharmacy students.

Additional Information on the Course
This course introduces the students to the general principles of medicinal chemistry and drug-target interactions. Several topics concerning drug discovery, design, and development will be covered. Concepts that explain key functional groups in drugs and how the structure influences activity and pharmacokinetics and, consequently drug choices will be examined. A few selected drug classes that influence major systems will be covered as well.

Course Credit
2 credit hours

Pre-Requisites: PHAR 7401

Co-Requisites: PHAR 7613

Class Meeting Days, Time & Location
Mondays, 10:00 am – 12:00 pm; Room WTB 236.

Course Coordinator
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Office hours: XXdays XX am – XX am, open door, and by appointment
Preferred method of contact: Email

Course Instructor
Santosh Aryal, PhD
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Office hours: Fridays 12 – 2 pm and by appointment
Preferred method of contact: Email, and face-to-face meeting

Fisch College of Pharmacy (FCOP) and UT Tyler Policies
This is part 1 of the syllabus. Part 2 contains UT Tyler and the FCOP course policies and procedures. These are available as a PDF at https://www.uttyler.edu/pharmacy/academic-affairs/. For experiential courses (i.e., IPPE and/or APPE), the Experiential Manual contains additional policies and instructions that supplement the Syllabus Part 1 and 2. Please note, the experiential manual may contain policies with different deadlines and/or instructions. The manual should be followed in these cases.

Required Materials

Most course required materials are available through the Robert R. Muntz Library. These materials are available either online (http://library.uttyler.edu/) or on reserve.

1. An Introduction to Medicinal Chemistry, 6th ed. Graham Patrick. Oxford University Press. ISBN-10: 0198749694
2. **Other required materials will be posted on the classes' Canvas site. The site address is uttyler.edu/canvas.**

Recommended Materials

The course-recommended materials are on reserve at the Robert R. Muntz Library.

1. Foye's Principles of Medicinal Chemistry, 8th ed. Thomas Lemke et. al. Wolters Kluwer Health ISBN-10: 1496385020.
2. Basic Concepts in Medicinal Chemistry, 1st ed. Marc Harrold and Robin Zavod. American Society of Health-System Pharmacists. ISBN-10: 1585282669

Course Format

The course may include, but is not limited to, the following activities:

1. Independent study of selected readings
2. Individual readiness assessment tests (iRATs)
3. Team-based learning, active learning strategies like team readiness assessment tests (tRATs), and team application of content and concepts

Course Learning Outcomes (CLOs)

CLOs	PLO(s) (1-13)	ACPE Appendix 1	ACCP Didactic Toolkit	NAPLEX (1.1-6.5)	MPJE (1.1-4.7)	Assessment Methods
1. Identify the array of possible biological drug targets	1	Medicinal Chemistry	N/A	N/A	-	1,2
2. Clarify the concepts of drug discovery and development	1	Medicinal Chemistry	N/A	N/A	-	1,2
3. Analyze drug target interactions	1,2	Medicinal Chemistry	N/A	2.1	-	1,2
4. Predict activity and metabolic fate based on structure variations	1,2	Medicinal Chemistry	N/A	2.1, 5.1	-	1,2
5. Investigate selected drug classes	1,2	Medicinal Chemistry	N/A	2.1, 4.5, 5.1	-	1,2

Course Assessment Methods

	Assessment Method	Description
1	ExamSoft Multiple Choice or Multiple Selection Question(s)	*Standard MCQ, T/F and Select All that apply questions.*
2	ExamSoft Open Ended Question(s)	*Short essay, hot spot and fill in the blank questions*

Grading Policy & Grade Calculation

Grades will be determined based on the evaluation of individual readiness assessment tests (iRATs), midterm examinations, final written examinations, graded application assignments, participation in team-based projects, and other assessment methods. Assessments may include multiple-choice, true/false, short-answer, essay, hot spot, and problem-based questions. ES: exam soft

During the time the course is in progress, students who obtain less than 75% on any summative assessment or a total course grade of less than 75% during a particular semester will receive an academic alert from the course coordinator and the Office of Academic Affairs and be subject to weekly in-course remediation with the course instructor(s). The student's faculty advisor may receive an academic alert to act upon on the student's behalf.

All examinations, tests, and assignments, including the final examination, may be **cumulative.** Students are responsible for the material presented during the prior courses. The grading scale for all graded material is below. The final course grade will be assigned according to the calculated percentage, and the percentages will not be rounded upward or downward. For additional information, see examination/assessment policy.

Standard Grade Calculation*

Individual Component	**90%**
iRATs/Other Individual Activities	10%
Midterm	35%
Final Written exam	45%
Team Component	**10%**
Team Application(s)/Assignment(s)	10%
Total	**100%**

The final course letter grade will be determined according to the following grading scheme:

A	90 - 100 %
B	80 - 89.999 %
C	70 - 79.999 %
D	65.0 - 69.999 %
F	< 65.0 %

Appropriate Use of Artificial Intelligence

AI is permitted only for specific assignments or situations, and appropriate acknowledgment is required. In this course, we may use AI tools (such as ChatGPT and Copilot) to examine how these tools may inform our exploration of the class topics. You will be notified as to when and how these tools will be used, along with guidance for attribution. Using AI tools outside of these parameters violates UT Tyler's Honor Code, constitutes plagiarism, and will be treated as such.

PHAR 7203 Course Schedule

W	DATE (M)	TOPIC	Instructor	CLO	Disease State
1	01/15/24	MLK Day			
	1/18/24*	Medicinal Chemistry: Drugs and Drug Targets	Abdelaziz	1	N/A
2	01/22/24	Medicinal Chemistry: Functional Groups and Stereochemistry	Aryal	4	N/A
3	01/29/24	Medicinal Chemistry: Drug Discovery: Finding A Lead	Aryal	2	N/A
4	02/05/24	Medicinal Chemistry: Drug Design: Target Interactions	Aryal	2,3,4	N/A
5	02/12/24	Medicinal Chemistry: Drug Optimization	Aryal	2,3,4	N/A
6	02/19/24	Medicinal Chemistry: Optimizing Access to Target and Prodrugs	Abdelaziz	2,4	N/A
7	02/26/24	Medicinal Chemistry: Drug Metabolism and Exam Review	Abdelaziz	4	N/A
8	03/04/24	Midterm			
	03/11/24	Spring Break			
9	03/18/24	Medicinal Chemistry: Adrenergic Agents	Abdelaziz	3,4,5	Hypertension, Asthma
10	03/25/24	Medicinal Chemistry: Cholinergic Agents	Abdelaziz	3,4,5	Neurocognitive disorders, Glaucoma
11	04/01/24	Medicinal Chemistry: Antihistaminic and Ulcer Medications	Abdelaziz	3,4,5	Peptic ulcer disease, Allergic rhinitis
12	04/08/24	Medicinal Chemistry: Non-Steroidal Anti-inflammatory and Disease Modifying Antirheumatic Drugs	Abdelaziz	3,4,5	Pain, nociceptive, Headache, Rheumatoid Arthritis
13	04/15/24	Medicinal Chemistry: Adrenocorticoids and Gout Medications	Abdelaziz	3,4,5	Asthma, Rheumatoid Arthritis, Gout and hyperuricemia, Psoriasis, Dermatitis
14	04/22/24	Medicinal Chemistry: Diuretics and Exam Review	Abdelaziz	3,4,5	Hypertension, Sodium and water disorder
15		Finals Week			
Please note that dates, topics, and assignments are subject to change. In the event of a change, you will be given ample notification of the change.					

***This class will be taught on Tuesdays, from 8:30 am – 10:30 am in WTB 236**

RATs are to be expected every week, please prepare accordingly.