

Spring 2022 Syllabus, CHEM 363

Introduction to Drug Discovery and Pharmacokinetics

Important Note: This syllabus, along with course assignments and due dates, are subject to change. It is the student's responsibility to check Canvas for corrections or updates to the syllabus. Any changes will be clearly noted in a course announcement or through email.

Instructor: Dr. Amanda Jonsson

Office: CBB 400

Office Hours:

Monday 10 – 10:50 a.m.

Wednesday 1 – 1:50 p.m.

Friday 9 – 9:50 a.m.

Email me to set up a time outside of office hours to meet

E-mail: ajonsson@uwsp.edu

*****The best way to contact me is by email*****

Instructor Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00		Chem 365 CBB 261	Chem 365 Lab 01L1 CBB 336	Chem 365 CBB 261	Chem 365 CBB 261
9:00					Office Hour
10:00	Office Hour				
11:00	Chem 106 Lab 03L1 CBB 236	Chem 363** CBB 265		Chem 363** CBB 265	
12:00					
1:00		<i>Lab Prep</i>		Office Hour	
2:00		Chem 365 Lab 01L2 CBB 336			Dept. Meeting*
3:00	UAC*				
4:00					

*Does not meet every week

**Chem 363 Lecture ends at 12:15 p.m.

Meeting Times

Lecture: Tuesday, Thursday 11 – 12:15 p.m. in room 265 of the Chemistry Biology Building (CBB)

Course Description: Overview of the drug discovery process and introduction to concepts in pharmacokinetics such as drug absorption, distribution, and metabolism as well as methods for structural determination of drug targets. Introduction to basic concepts in biochemistry while applying concepts from thermodynamics, kinetics, organic chemistry, and molecular modeling (3 credits).

Prerequisites: CHEM 220 or CHEM 326, or instructor consent

Textbook & Course Materials

Lecture Text: Medicinal Chemistry: The Modern Drug Discovery Process by Stevens, Pearson, 2014. This book is available for rental at the University Bookstore. Textbooks can be picked up in person or shipped to your home if you will be not be on campus. Please see the [University Store and Text Rental webpage](#) for more information.

Scientific Calculator

Course Learning Outcomes (CLOs)

By the end of this course students should be able to:

- CLO 1: Describe the steps and timeline for modern drug discovery including bringing the drug to market.
- CLO 2: Use tools provided to evaluate biological properties of drugs and drug candidates.
- CLO 3: Compare and contrast the study of different types of drug targets.
- CLO 4: Propose rational modifications to an existing drug.

Attendance

Attendance at all class sessions is expected. Participation is not mandatory, but not attending or participating in classes will make this course much harder than it needs to be. If you miss a class session you should get notes from a fellow student, read the relevant sections from the textbook, look at and/or complete any handouts/worksheets and then contact me with questions you may have about the material. Not attending or participating in classes will make this course much harder than it needs to be.

Academic Responsibility & Integrity

I encourage students to work and study in groups. However, any work submitted for a grade must reflect your own work and understanding of the material. Academic dishonesty will be dealt with following the rules on academic misconduct in the current [UWSP student handbook](#) (UWSP Chapter 14) and, at a minimum, a score of 0 on the assignment. Egregious and/or repeated problems will result in an

F in the course. Each student is expected to act with honesty and integrity, and must respect the rights of others to learn in a safe, respectful and inviting environment. *Please do not hesitate to contact me if you have any questions or concerns.*

Inclusivity Statement

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups.

If you have experienced a bias incident (an act of conduct, speech, or expression to which a bias motive is evident as a contributing factor regardless of whether the act is criminal) at UWSP, you have the right to report it using this [link](#). You may also contact the Dean of Students office directly at dos@uwsp.edu.

I commit to doing my part as well by keeping myself informed on the most recent research and practices that best support inclusive learning. I last completed UWSP's SafeZone training in April 2020.

Equal Access for Students with Disabilities

UWSP will modify academic program requirements as necessary to ensure that they do not discriminate against qualified applicants or students with disabilities. The modifications should not affect the substance of educational programs or compromise academic standards; nor should they intrude upon academic freedom. Examinations or other procedures used for evaluating students' academic achievements may be adapted. The results of such evaluation must demonstrate the student's achievement in the academic activity, rather than describe his/her disability.

If modifications are required due to a disability, please inform the instructor and contact the [Disability and Assistive Technology Center](#) to complete an Accommodations Request form.

Grade Policy

Your grade in this class will consist of the following components. **These categories/percentages may change!** Any changes to this scheme will be announced in class, through email, and/or on Canvas.

In-Class Activities (10%): These are activities you will complete during class sessions where you will have time to discuss the questions with your classmates before submitting answers. These activities will be designed to help you understand the materials (lectures, videos, readings, etc.).

Homework (20%): These are assignments that will be completed outside of class and will assess your understanding of relevant lecture material. They may include looking up information on different drugs or drug targets, or end of chapter problems from the textbook.

Case Studies (20%): Case studies are a more in-depth look at a certain drug or topic. We will usually have lecture time set aside to discuss case studies before your final answers are submitted. Typically, in a week where a case study is due, there will not be a separate homework assignment.

Projects and Presentations (50%): Projects and presentations will take the place of exams as formal assessments in this class. These assignments may be completed in groups but may also include an individual portion. There will be at least one presentation that groups will upload to Canvas midway through the semester.

Due dates will be announced in class, through email, and/or on Canvas. Unexcused late material will result in a grade penalty or a 0 for that assignment. If you need extra time on an assignment, please ask for an extension.

Letter grades will be assigned according to this scale:

Percent	Grade	Percent	Grade
≥ 93 %	A	73 – 76 %	C
90 – 92 %	A-	70 – 72 %	C-
87 – 89 %	B+	67 – 69 %	D+
83 – 86 %	B	63 – 66 %	D
80 – 82 %	B-	< 63 %	F
77 – 79 %	C+		

I reserve the right to alter this scale depending on the overall performance of the class. Under no circumstances will you require a higher percentage to achieve a letter grade than what is listed in the above table. Questions regarding grades on any assignment should be addressed as soon as possible after the return of graded material to you.

Important Dates

February 2 nd	Last day to drop without a W grade reported
April 8 th	Last day to drop a 16-week course
May 13 th	Last day of classes
May 16 th	Final Exam Period, Monday May 16 th 12:30 – 2:30 p.m.

Tips for Success

- Engage with provided lecture material
 - Complete assigned readings, etc. **BEFORE** the designated lecture.
- Attend all classes
 - There is no substitute for being present and engaged in class!
- Participate in class discussions and activities
- Attend office hours when you have questions or are confused by a topic
- Complete projects and assignments on time
- **Communication is key**
 - If you are unsure about what an assignment or project is asking you to do, email me or ask in office hours.
 - If you need an extension or are feeling overwhelmed, email me or ask for help in office hours.
 - If you can't attend office hours one week but still have questions or concerns, email me and we will find a time that works for both of us to meet.
 - If your situation suddenly changes and you face new challenges in completing course work, email me and we can discuss options.
 - ***I can't help if I don't know there is an issue!***

Tentative Schedule dates, lengths of units, and activities may change. Be sure to check Canvas for an updated list of activities.

Unit 1: Drug Discovery and Introduction to Pharmacokinetics – approximately 3 weeks, including the following activities:

- Homework #1: DrugBank Online (end of week 1)
- Homework #2: SwissADME (end of week 2)
- Case Study #1: Vioxx (end of week 3)

Unit 2: Drug Targets – approximately 6 weeks, including the following activities:

- Case Study #2: HIV-1 Protease (end of week 5)
- Presentation Final Draft (end of week 8)
 - There will be additional presentation assignments/activities due leading up to the final draft at the end of week 8
- Homework #3: Receptors (end of week 9)
- Case Study #3: HIV Reverse Transcriptase (end of week 10)

Unit 3: Pharmacokinetics – approximately 3 weeks, including the following activities:

- Homework #4: Pharmacokinetics (end of week 11)

Unit 4: Introduction to Drug Design – approximately 3 weeks, including the following activities:

- Project #1: G-Protein Coupled Receptor (GPCR) (end of week 13)
- Project #2: AChE Drug Design (end of week 15)