PHC230H1 S

Pharmaceutics 1

Winter 2025 Syllabus

Course Meetings

PHC230H1 S

Section	Day & Time	Delivery Mode & Location
LEC0101	Monday, 2:00 PM - 3:00 PM Tuesday, 11:00 AM - 12:00 PM Friday, 10:00 AM - 11:00 AM	In Person: PB B150 In Person: PB B150 In Person: PB B150
TUT0101	Friday, 9:00 AM - 10:00 AM	In Person: PB B150

Refer to ACORN for the most up-to-date information about the location of the course meetings.

Course Contacts

Instructor: Dr. Tigran Chalikian
Email: t.chalikian@utoronto.ca
Phone: 4169463715
Office Hours and Location: Mondays, 12-1 P. M., PB1105. By appointment only.

Course Overview

This course introduces the key concepts in the design, manufacture, and use of efficacious dosage forms. The characteristics of different delivery routes are discussed. The course focuses on the role of pharmaceutics in drug development, and the role of anatomy and physiology in the conception and design of effective dosage forms. Topics covered include biopharmaceutical considerations, pharmaceutical solutions, sterilization theories and techniques, complexation and solubility enhancement, pre-formulation, colloids and dispersions, powders and micromeritics, and solid-state properties. Students will gain an appreciation of how the properties of drug components (such as pH, salt concentration, co-solvents, sterility, colloids, dispersions, powders, and solids) determine the stability, solubility, and efficacy of drug products.

An introduction to the key concepts in the design, manufacture, and use of efficacious dosage forms. The course covers the characteristics of different delivery routes.

Course Learning Outcomes

At the end of this course, the student will understand and be able to explain:

1. The role of pharmaceutics in drug development

2. The role of anatomy and physiology in the conception and design of effective dosage forms. The interplay between physiology and a drug's site of action in the development of medications.

3. Physical chemical factors that influence drug availability in vivo, especially for oral, liquid dosage forms. How pH, salt concentration, co-solvents and other factors influence the stability and efficacy of medications.

4. The importance of sterility in the manufacture and use of medications. Methods of sterilization.

5. The role of pre-formulation in the drug development process

6. The properties and uses of colloids and dispersions in the stabilization of drugs

7. The physics and mechanical properties of powders (micrometrics) and the application of these properties to pharmaceutical formulation development.

8. How the properties of solids determine the stability, solubility, and therapeutic efficacy of drug products.

Prerequisites: (CHM135H1 and CHM136H1)/ CHM151Y1; CHM220H1/ CHM222H1
Corequisites: None
Exclusions: PHM141H1
Recommended Preparation: None
Credit Value: 0.5

N/A

Marking Scheme

Assessment	Percent	Details	Due Date
Mid-term Examination	34%	Problem sets and quizzes (×4): 16% Mid-term examination: 34% Final exam: 50%	2025-03-03
Problem Set 1.	4%	17 Jan. handout, 24 Jan.5 pm due.	2025-01-24
Quiz 1.	4%	Based on Problem Set 2. 5 minutes, to be written immediately before the lecture one week after the problem questions are distributed to you.	2025-02-07

Assessment	Percent	Details	Due Date
Quiz 2.	4%	Based on Problem Set 3. 5 minutes, to be written immediately before the lecture one week after the problem questions are distributed to you.	2025-03-07
Problem Set 4.	4%	24 March handout, 31 Mar. 5 pm due.	2025-03-31
In-Person Final Exam	50%		Final Exam Period

ASSESSMENT DATES & MARK BREAKDOWN

1. Problem set 1 (4%, 17 Jan. handout, 24 Jan. 5 pm due)
2. Quiz 1 (based on Problem set 2) (4%, Friday, 7 Feb. or TBA): 5 minutes, to be written immediately before the lecture one week after the problem questions are distributed to you.
3. Mid-term examination (34%, Monday, 3 Mar. 8:45 – 10:45 am, EX100) Term Test 3. Quiz 2 (based on Problem set 3) (4%, Friday, 7 March or TBA): 5 minutes, to be written immediately before the lecture one week after the problem questions are distributed to you.
4. Problem set 4 (4%, 24 March handout, 31 Mar. 5 pm due)
5. Final examination (50%, date and time TBA): 120 minutes, to be written during the Winter semester final examination period.

Late Assessment Submissions Policy

Students presenting a valid petition for a missed examination will be given the opportunity to write a make–up exam. In the case of a missed quiz, the student's mark will be pro-rated, i.e., calculated based on the quizzes completed.

Policies & Statements

Course Policies

- Each member of this course is expected to maintain a:

(i) professional and respectful attitude during all course activities, including classes tutorials, and online activity.

(ii) personal calendar/schedule/organizer to ensure that all course activities are completed, and due dates are met.

(iii) collection of notes recorded independently based on concepts covered in course activities (students registered with Accessibility Services requiring a class note-taker will have access to this accommodation)

(iv) familiarity with the university policy on Academic Integrity (overleaf)

- The University of Toronto is committed to equity, human rights, and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. As a Course Instructor, I will neither condone nor tolerate behaviour that undermines the dignity or self-esteem of any individual in this course and wish to be alerted to any attempt to create an intimidating or hostile environment. It is our collective responsibility to create a space that is inclusive and welcomes discussion. Discrimination, harassment and hate speech will not be tolerated. If you have any questions, comments, or concerns, we encourage you to reach out to the staff in our Equity Offices.

- Communication with instructor, I will strive to respond to email within 24 hrs. on weekdays.

- Privacy language and appropriate use of course materials: https://teaching.utoronto.ca/ed-tech/audio-video/sample-statements/
- Students presenting a valid petition for a missed examination will be given the opportunity to write a make–up exam. In the case of a missed quiz, the student's mark will be pro-rated, i.e., calculated based on the quizzes completed.

- All material for this course will be submitted via the course's Quercus shell.

- A request to have a quiz or exam re-evaluated must be made to the course coordinator.

- In the case that a student is unable to write an exam due to illness or other difficulty, the student should contact the coordinator before the examination, if possible.