GHENT UNIVERSITY

Course Specifications

Valid in the academic year 2022-2023

Physical Chemistry of Drugs (J000492)

Course size *(nominal values; actual values may depend on programme)*

Credits 6.0	**Study time 180 h**	**Contact hrs**	37.5h

Course offerings and teaching methods in academic year 2022-2023

A (semester 2)	English	Gent	online seminar: coached exercises	7.5h
			lecture	30.0h

Lecturers in academic year 2022-2023

De Smedt, Stefaan	FWO1	lecturer-in-charge
Lentacker, Ine	FWO1	co-lecturer
Raemdonck, Koen	FWO1	co-lecturer

Offered in the following programmes in 2022-2023	**crdts**	**offering**
Bachelor of Science in Pharmaceutical Sciences	6	A
Master of Science in Pharmaceutical Engineering	6	A
Exchange Programme Faculty of Pharmaceutical Sciences	6	A

Teaching languages

English

Keywords

Physicochemical properties of drugs under solid form or in solution, pre-formulation of drugs, pharmaceutical excipients, drug release, drug absorption, rheology, light scattering, calorimetry, surface tension and adsorption.

Position of the course

This course continues on the subjects explained in (An)Organic Chemistry, Physics for Pharmacy and the practical exercise: synthesis & analysis. It is preparing the student for the Galenic formulation course. The course is practiced by means of a wide range of exercises that are offered in 'physicochemistry, analysis & quality of medicines'. The main objectives are: (1) to give the student a fundamental insight into the physicochemical properties of medicines; (2) to familiarize the student strongly with the pharmaceutical importance of the physicochemistry of medicines; (3) to teach the student to analyse and interpret physicochemical information about medicines in a pharmaceutical way.

Contents

1. Physicochemical properties of solid drugs.
2. Physicochemical properties of medicinal products in solution.
3. Physicochemical properties of pharmaceutical excipients such as surfactants and polymers.
4. Physicochemistry of the release and absorption of medicinal products.
5. Physicochemical methods widely used in pharmaceutical research: calorimetry, light scattering and rheology.
6. Adsorption and surface tension: pharmaceutical interest.

Initial competences

This course unit builds on certain learning outcomes of course units 'Inorganic Chemistry', 'Organic Chemistry', 'Mathematics', 'Physics for Pharmacy' and 'Drug analysis: the Basics' from the study programme 'Bachelor in Pharmaceutical Sciences'.

Final competences

1 The importance of understanding the physicochemical properties of solid drugs forms in terms of their therapeutic effect.
2 To understand the importance/have insight the physicochemical properties of drugs in solution (such as solubility, dissolution rate, osmotic pressure and isotonicity, kinetics of degradation reactions and stability).
3 To understand the physicochemical principles that determine drug release and absorption.
4 Understand the importance of the molecular weight of pharmaceutical polymers in their pharmaceutical application.
5 Understand physical pharmaceutical methods such as rheology, calorimetry and light scattering. In particular, what information on pharmaca and pharmaceutical excipients can be obtained by these methods.
6 Understand the importance of adsorption and surface tension in a pharmaceutical context.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, Online seminar: coached exercises

Extra information on the teaching methods

In the (interactive) lectures the students are strongly encouraged to think along about the content/matter that is being discussed.
Online exercises: guided by co-lecturer.

Learning materials and price

De course is based on the handbook Physicochemical Principles of Pharmacy - Alexander T. Florence & David Attwood – Pharmaceutical Press. It is recommended to purchase this work. There is also a syllabus and a collection of the slides used in the lectures are offered (about 20 Euro).

References

Course content-related study coaching

There is the possibility to ask questions before and after the classes. At the end of a series of lessons, if necessary, extra time will be provided for further questions. For the processing of the study material, the students can also contact the supervisors of the practical exercises: physicochemistry, analysis & quality of medicines.

Assessment moments

end-of-term assessment

Examination methods in case of periodic assessment during the first examination period

Written examination with open questions

Examination methods in case of periodic assessment during the second examination period

Written examination with open questions

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Calculation of the examination mark