GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Physics of Surfaces and Thin Films (C004449)

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

Credits 6.0 **Study time 180 h**

Course offerings and teaching methods in academic year 2025-2026

A (semester 1)	Dutch	Gent	lecture
			seminar

Lecturers in academic year 2025-2026

Depla, Diederik	WE04	lecturer-in-charge

Offered in the following programmes in 2025-2026	**crdts**	**offering**
Bachelor of Science in Physics and Astronomy	6	A

Teaching languages

Dutch

Keywords

Thin films, surfaces, physical deposition techniques

Position of the course

This course unit belongs to the learning pathway 'Interdisciplinarity & Broadening" in the Bachelor program Physics and Astronomy.
To acquire a thorough level of understanding of surface physics and the interaction of surfaces with electrons, ions and molecules. To familiarize the student with the characterization of surfaces. These subjects are applied to the study of different deposition techniques for thin films and their growth mechanisms. However, several of the subjects can be applied in different courses.

Contents

- Surface physics: Chapter 1 : Surface Physics and Thin Films, Chapter 2 : Ultra High Vacuum and clean surfaces, Chapter 3 : Surface Crystallography, Chapter 4 : Surface Thermodynamics, Chapter 5 : The electronic structure of surfaces, Chapter 6 : Surface Chemical Analysis : XPS, Chapter 7 : Adsorption
- Thin Films: Chapter 8 : Thin film growth, Chapter 9 : Evaporation, Chapter 10 : Sputter deposition

Initial competences

The student in the Bachelor Physics and Astronomy has enough background to follow this course. It is however advisable to the course is taken in the 3rd bachelor.

Final competences

1 The student must understand the basic subjects concerning surface physics.
2 The student must be able to describe the different measuring techniques and deposition techniques in a comprehensive way.

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

Seminar, Lecture, Independent work

Study material

Type: Syllabus

Name: Physics of surfaces and thin films
Indicative price: Free or paid by faculty
Optional: no
Language : English
Number of Pages : 285
Available on Ufora : Yes
Online Available : No
Available in the Library : No
Available through Student Association : No

References

Course content-related study coaching

- Teacher is available for individual explanation of course subject matter
- The problem solving sessions give the student the opportunity to practice the subjects taught during the classroom lecture.

Assessment moments

end-of-term assessment

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

Written assessment with open-ended questions

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

Written assessment with open-ended questions

Examination methods in case of permanent assessment

Written assessment with open-ended questions

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

Periodical evaluation
The written part (open book) tests the student's knowledge and understanding of the course material. The exam contains 6 questions (score on 10 per question). The average of the 5 best answers determines the final score.
Non-periodical evaluation
8 hometasks are foreseen to test the subjects discussed in the course.

Calculation of the examination mark

The examination mark is determined for 16/20 by the periodical evaluation, and for 4/20 by the non-periodical evaluation.