GHENT UNIVERSITY

Course Specifications

From the academic year 2022-2023 up to and including the academic year

Thin Films and Surface Physics (C000838)

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

Credits 6.0	**Study time 180 h**	**Contact hrs**	52.5h

Course offerings in academic year 2023-2024

Lecturers in academic year 2023-2024

Offered in the following programmes in 2023-2024	**crdts**	**offering**

Teaching languages

Dutch

Keywords

Thin films, surfaces, sputtering processes

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

Demonstration, Lecture, Self-reliant study activities, Seminar: coached exercises

Learning materials and price

A syllabus is available (free)

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

Open book examination, Written examination with open questions

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

Open book examination, Written examination with open questions

Examination methods in case of permanent assessment

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.