GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2018-2019

Photovoltaic Energy Conversion (E900132)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

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

Credits 4.0 **Study time 120 h** **Contact hrs** 30.0 h

Course offerings and teaching methods in academic year 2021-2022

A (semester 2)	English	Gent	seminar	15.0 h
			excursion	5.0 h
			lecture	17.5 h
			seminar: practical PC room classes	2.5 h
0 (semester 2)				

Lecturers in academic year 2021-2022

Strubbe, Filip	TW06	lecturer-in-charge
Khelifi, Samira	WE04	co-lecturer

Offered in the following programmes in 2021-2022	**crdts**	**offering**
Bridging Programme Master of Science in Photonics Engineering	4	A
European Master of Science in Photonics	4	A
Master of Science in Photonics Engineering	4	A, 0

Teaching languages

English

Keywords

photovoltaics, solar energy, sustainable energy

Position of the course

To get familiar to solar energy and its conversion to electrical work, by means of the photovoltaic effect.
Ecologic advantages of sustainable energy.
Positioning of the sustainable energies within a broader thermodynamic context.

Contents

- Availability of solar energy
- Thermal conversion
- Principles of photovoltaic conversion
- Realistic efficiency
- Classical silicon solar cells (mono and polycrystalline)
- Amorphous solar cells
- GaAs solar cells
- Heterojunction solar cells
- Ecology and economy

Initial competences

basics of thermodynamics, quantumphyics, solid-state physics, semi-conductor physics, diode theory

Final competences

1 INSIGHTS: Understanding the basic principles of photovoltaic energy conversion. Understanding the limitations of realistic solar panels.
2 INSIGHTS: The ecological benefits of sustainable energy. Understanding the efficiency and

limitations of photovoltaic and thermal energy conversion.
3 PROFICIENCIES: Calculations of the available solar energy.
4 PROFICIENCIES: Calculations of the conversion and the conversion efficiency of solar energy.

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

Excursion, lecture, seminar, seminar: practical PC room classes

Learning materials and price

course notes

References

Course content-related study coaching

Evaluation methods

end-of-term evaluation and continuous assessment

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

Written examination, oral examination

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

Written examination, oral examination

Examination methods in case of permanent evaluation

Report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

During examination period: written closed-book exam; oral closed-book exam
non-period-boundevaluation: computer practicum with report

Calculation of the examination mark

period-bound evaluation: written+oral examination: 80%
non-period-bound evaluation: report computer practicum: 20%