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 Specifications
Valid as from the academic year 2018-2019

Course offerings and teaching methods in academic year 2020-2021

A (semester 2)  
English  
Gent  

<table>
<thead>
<tr>
<th>Seminar</th>
<th>15.0 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>17.5 h</td>
</tr>
<tr>
<td>Seminar: practical PC room classes</td>
<td>2.5 h</td>
</tr>
<tr>
<td>Excursion</td>
<td>5.0 h</td>
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</tbody>
</table>

Lecturers in academic year 2020-2021

Strubbe, Filip  
TW06 lecturer-in-charge  

Khelifi, Samira  
TW06 co-lecturer  

Offered in the following programmes in 2020-2021

<table>
<thead>
<tr>
<th>Programme</th>
<th>crs ts</th>
<th>offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridging Programme European Master of Science in Photonics</td>
<td>4</td>
<td>A</td>
</tr>
<tr>
<td>European Master of Science in Photonics</td>
<td>4</td>
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</table>

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, quantumphysics, 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.

(Course size)  
(nominal values; actual values may depend on programme)  
Credits 4.0  
Study time 120 h  
Contact hrs 30.0 h

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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


non-period-bound evaluation: computer practicum with report.

Calculation of the examination mark

period-bound evaluation: written+oral examination: 80%

non-period-bound evaluation: report computer practicum: 20%.