

Course: Specialisation Photovoltaics (Northumbria)

credits: 30

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| Course code | ZVWH2SPV | Modes of delivery | Education |
| Name | Specialisation Photovoltaics (Northumbria) | Assessments | Specialisation Photovoltaics - Other assessment |
| Study year | 2022-2023 | | |
| ECTS credits | 30 | | |
| Language | English | | |
| Coordinator | C.B. Vogt | | |

Learning outcomes

The student will

- ◆ be able to discuss the properties of semiconductors which are important for PV applications.
- ◆ be able to describe the important PV devices.
- ◆ have a good understanding of semiconductors in equilibrium and non-equilibrium situations, homojunction and heterojunction solar cell devices and the differences between ideal and real devices.
- ◆ understand the need for purity and minimisation of crystal imperfections for making high performance devices.
- ◆ be able to describe and discuss the pros and cons of bulk crystal growth, epitaxial and low cost thin film deposition methods.
- ◆ at an introductory level outline how to make important solar cell devices.

Students will be able to:

- ◆ discuss the principles of operation and design of PV devices.
- ◆ discuss the main fabrication methods for advanced PV devices.
- ◆ describe and use the main characterisation methods used with semiconductor materials and PV devices.

The student will:

- Be able to complete basic design of both stand alone and grid connected systems
- Understand the requirements for construction, electrical connection and operation of systems
- Have experience of analysing system performance

The students will:

- Have an understanding of the economics of photovoltaic systems and their comparison with other electricity sources
- Be able to perform an environmental impact assessment or energy analysis for a PV system

Content

Contents:

1. Cell and Module Technology
2. Advanced Cell Design
3. Photovoltaic System Technology
4. Economics, Policy and Environment

Included in programme(s)

European Master in Renewable Energy

School(s)

Institute of Engineering