

## Course: Wind and Marine Energy

credits: 5

**Course code** ZVWH17WHE  
**Name** Wind and Marine Energy  
**Study year** 2021-2022  
**ECTS credits** 5  
**Language** English  
**Coordinator** W.F.J. Swart Ranshuysen

**Modes of delivery** Practical / Training  
 Tutorial  
**Assessments** Assignment WHE - Other assessment  
 Lab WHE - Other assessment  
 Theory - Computer, organised by STAD  
 examinations

### Learning outcomes

After successful completion of this module, the student is able to:

- Perform a resource assessment on basis of wind speed measurements
- Interpret and analyze wind turbine performance measurements
- Make motivated wind turbine design choices
- Develop a mathematical/physical model to optimize a wind turbine design in terms of energy production, loads and costs
- Determine acoustic noise levels on a wind turbine
- Keep an orderly lab notebook according to the lab notebook guidelines
- Make a quantitative assessment of measurement and calculation errors and uncertainties
- Understand the-state-of-the-art and the potential of marine energy
- Report (in written form) the results of the experiments and analyses in a scientifically correct and clear form

### Content

In terms of scientific and technical contents this module will treat the following aspects of wind energy:

- Introduction into wind energy
  - The wind energy sector in a bird view: history, markets, scenario's and roadmaps,
  - Technological challenges and concepts
  - Off-shore wind energy versus on-shore wind energy
- Wind climate and resource assessment (measurements and modelling)
  - Rotor design (aerodynamics, aero-elasticity, acoustics, costs)
- Introduction into Marine energy

### Included in programme(s)

European Master in Renewable Energy

### School(s)

Institute of Engineering