

## Course: Electrical Drive Technology

credits: 5

**Course code** ELVH17GEA  
**Name** Electrical Drive Technology  
**Study year** 2022-2023  
**ECTS credits** 5  
**Language** Dutch, with parts in English  
**Coordinator** A. Hoogerwerf

**Modes of delivery** Lecture  
 Practical / Training  
**Assessments** Electrical Drive Technology - Assignment

### Learning outcomes

- Determine the influence of voltages and frequencies on magnetic behaviour for each component, as well as magnetic losses.
- Determine the parameters of transformers and draw vector diagrams for transformer circuits.
- Determine parameters of direct-current machines with a shunt or series field using a given torque/speed curve, as well as draw the torque/speed curve from given parameters.
- Determine the point of operation of synchronous machines in a static situation, using given parameters, as well as determine parameters from measurements.
- For asynchronous machines, determine the relationship between given parameters in an equivalent-circuit diagram and the torque/speed curve.
- For asynchronous machines, interpret torque/speed curves regarding starting, stopping, controlling speed combined with given load curves of machines.

### Content

- Magnetic phenomena in electrical machines. Behaviour of soft and hard magnetic materials and their losses.
- Structure of 3-phase systems and their vector diagrams.
- The following technical components:
  - 1 and 3-phase transformers
  - Direct-current machines with shunts and series winding
  - Synchronous machines
  - 3-phase asynchronous motors
- Topics that will be covered for each component:
  - Parameters, descriptive formulas and equivalent-circuit diagrams
  - Construction and structure
  - Torque/speed curves in static situations for rotating components
  - Methods of starting and stopping rotating components
  - Interaction with loads and frequency converters while starting, stopping, and controlling.

### Included in programme(s)

Electrical Engineering Major Electronics  
 Electrical Engineering Major Mechatronics

### School(s)

Institute of Engineering