

Electrical Engineering

Electrical Power Engineering

MSc Programme



Electricity is the most flexible and efficient source of energy to power mankind. In the decades to come, a revolution will unfold in the generation and delivery of electrical power, driven by the large scale introduction of renewable and distributed power generation, the need for environmentally-friendly and sustainable components and the liberalisation of the energy markets.

Degree	Master of Science
Starts	September
Type	full-time
Credits	120 ECTS, 24 months
Language	English
Application deadline	1 April (International BSc degree) 1 July (Bridging programme*) 1 September (Dutch BSc degree)
Tuition fee	€ 18.750 (non-EU applicants) € 2.168 (EU applicants)
Scholarships	scholarships.tudelft.nl

The track Electrical Power Engineering covers a wide range of issues. These include renewable energy, smart grids, environmentally friendly material technologies, the decentralisation of power generation, power-systems operations, high-voltage, power electronics and electrical machines.

Electrical power engineers are needed in order to design new components with an eye towards sustainable materials and efficient conversion processes, as well as to integrate them into a smart and adaptable electricity infrastructure.

Programme

The programme starts with several compulsory courses that provide you with the basics of Electrical Power Engineering. During the second semester of the first year, you can choose an in-depth specialisation based on the specialization profiles. Within your second year you will follow some more courses and work on your graduation project.

During your studies, the Department of Electrical Sustainable Energy will provide you with a unique and outstanding research

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First Year (60 EC)			
1 st quarter	2 nd quarter	3 rd quarter	4 th quarter
Common core courses	Track core courses	Track core courses	Specialisation courses
		Specialisation courses	
	Specialisation courses	Free elective courses	Free elective courses
Second Year (60 EC)			
1 st quarter	2 nd quarter	3 rd quarter	4 th quarter
Specialisation courses	Graduation project (45 EC)		
Free elective courses			

For more information on all courses, please visit: www.studyguide.tudelft.nl

facility called Electrical Sustainable Power Laboratory (ESPLAB) including: the High-Voltage Laboratory, DENlab, a Real-Time Digital Simulator, the Power Processing (Electrical Machines and Electronic Conversion) Laboratory, and PV Laboratory.

Specialisations

You are free to compose your own specialisations by choosing from a list of courses, in consultation with your thesis supervisor(s). The track offers the following specialisations:

High Voltage focuses on High Voltage Transmission Networks for large scale implementation of renewable energy sources (solar, wind, wave), development of intelligent materials, monitoring of HV systems, and the optimization and controllability of HV transmission grids.

Smart AC and DC grids focuses on the generation, transmission and distribution of electrical energy, and it explores technological options for the design and operation of future intelligent power grids, which will be subject to sustainability and reliability constraints. The topics of microgrids, e-mobility and smart cities are also covered within this profile.

Power Electronics & Electrical Machines covers electrical power processing and conversion, with an emphasis on improving

efficiency in industrial processes, offices, homes and E-mobility. It also covers the operation and design of electrical machines.

Solar Energy addresses all aspects of photovoltaic technology, from the design of a PV cell to the implementation of PV systems in the electricity grid.

Graduation examples

The master's thesis is the final challenge. You'll have to demonstrate your capacity to successfully carry out a research project. The projects can be completed at the research groups of the ESE department or at a company. You can complete the entire project by successfully presenting the results during a public presentation.

- Optimisation of on-site partial discharge measurements and evaluation of diagnostic parameters for assessing the condition of distribution cable systems
- Control of a multi-terminal voltagesource converter HVDC for offshore wind power
- Sustainable off-grid power for rural areas
- Wireless power transfer for emobility
- Directional relay coordination in ungrounded radial distribution networks using a real-time digital simulator
- Evaluation of frequency and transient stability indicators in future power systems with high levels of wind power generation

Career perspective



Companies

Siemens, ALSTOM, ABB, Shell, Philips, TNO, KEMA



Positions

Engineering, product design, consultancy and research