



Modules MSc Power Engineering (MSPE) PO20181 (start WS18/19)

Module ID	Module Name	Location	Lecturer	Semester	ECTS
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Core Modules Electrical Engineering (at least 20 Credits)

EI8028	Electrical Machines	Munich	Herzog	WS	5
EI8033	Energy Storage	Munich	Jossen	SS	5
EI8029	Energy Systems and Energy Economy	Munich	Hamacher	WS	5
EI8030	High Voltage Technology - Fundamentals	Munich	Koch	WS	5
EI8031	Power Electronics	Munich	Kennel	WS	5
EI8032	Power Transmission Systems	Munich	Witzmann	WS	5
EI80004	Sustainable Mobility	Munich	Hamacher	WS	5

Core Modules Mechanical Engineering (at least 20 Credits)

MW1420	Advanced Control	Garching	Kotyczka	WS	5
MW1421	Dynamics of Mechanical Systems	Garching	Rixen	WS	5
MW1581	Fluid Machinery	Garching	Haidn	SS	5
MW2152	Modeling, Control and Design of Wind Energy Systems	Garching	Bottasso	WS/SS	5
MW1354	Renewable Energy Technology I & II	Garching	Spliethoff	WS/SS	6
MW1532	Thermal Power Plants	Garching	Spliethoff	SS	5
MW1419	Thermodynamics in Energy Conversion	Garching	Spliethoff/ Aravind	WS	5

Elective Modules (addition) (15 Credits)

(less electives, if you have passed more core modules)

EI80009	Active Distribution Grids	XX	Hamacher	WS	5
MW2228	Aeroelasticity	Garching	Bottasso	WS/SS	5
BGU42010	Civil Engineering in Energy Technology	Munich	Mensingher, Vogt, Fischer	WS	5
IN2305	Cyber-Physical Systems	Garching	Althoff	SS	6
PH2086	Fuel Cells in Energy Technology	Garching	Schindler	SS	5
EI8034	High Voltage Insulation Technology	Munich	Koch	SS	5
BV460017	Hydro Power und Energy Storage	Munich	Knapp	WS	3
EI70860	Integration of Renewable Energies	Munich	Hamacher	WS/SS	5

Module ID	Module Name	Location	Lecturer	Semester	ECTS
MW1364	Internal Combustion Engines	Garching	Wachtmeister	SS	5
MW0799	Introduction to Nuclear Energy	Garching	Macián-Juan	WS	5
ED180003	Mathematical Modeling for Expansion and Dispatch Planning in Modern Energy Systems	Munich/ Garching	Hamacher	WS	5
EI7490	Mathematical Modeling of Complex Systems in the Energy Field	Munich	Hamacher	SS	5
MW0868	Modeling and Reduction of Complex Systems	Garching	Kotyczka	SS	5
EI70740	Nanotechnology for Energy Systems	Munich	Gagliardi	WS	5
ED180001	New Technologies in the Energy Transition of Shipping	Munich/ Garching	Hamacher	WS	5
MW1808	Nonlinear Control	Garching	Kotyczka	WS	5
EI70140	Optimal Control and Decision Making	Munich	Buss	SS	5
EI71069	Reliability of Electric Drives	Munich	Herzog	WS/SS	5
WI001255	Lecture Series Renewable Energy Systems in the Global South	Munich	Belz/Winklmaier	WS	6
EI76172	Renewable Energy Systems: Power Electronics, Modelling and Control	Munich	Kennel	WS	5
EI71013	System Design for the Internet of Things	Munich	Steinhorst	SS	5

Laboratories (10 Credits)

MW2134	Computational Thermo-Fluid Dynamics	Garching	Polifke	WS	4
MW2267	Design of Wind Turbine Rotors	Garching	Bottasso	SS	4
EI73631	Electrical Energy Storage Lab	Munich	Jossen	WS/SS	6
EI78023	Electrode - Electrolyte Interfaces	Garching	Wolfrum	SS	6
EI78020	Embedded Control Systems Laboratory	Munich	Chakraborty	WS	6
EI7467	Interdisciplinary Project Internship Concept Development of a Renewable Energy System in a Developing Country	Garching	Hamacher	WS	6
MW1869	Laboratory Course Energy Systems for MSPE	Garching	Spliethoff	WS/SS	5
EI8035	Laboratory Course High Voltage Technology	Munich	Koch	WS/SS	5
EI8037	Power Generation Lab	Munich	Hamacher	SS	5

Module ID	Module Name	Location	Lecturer	Semester	ECTS
EI78019	Practical Course Control of Low-Power Automotive Drives	Munich	Kennel	WS/SS	6
EI80006	Practical Course Power Electronics DC/DC Converter ¹	Munich	Kennel	WS/SS	6
EI80003	Practical Course Simulation and Optimization of Mechatronic Drive Systems	Munich	Kennel	WS/SS	6
EI7417	Project Course Drive Systems and Power Electronics	Munich	Kennel	WS/SS	5
EI74831	Project Lab Renewable and Sustainable Energy Systems	Garching	Hamacher	WS/SS	5
EI80008	Project Laboratory on Distribution Grid Simulation	Munich	Witzmann	SS	5
EI80005	Sensor Nodes Laboratory ²	Munich	Weig	WS/SS	5
EI78022	Simulation and Commissioning of Electrical Actuators	Munich	Herzog	WS/SS	5
MW1277	Simulation of Thermofluids with Open Source Tools	Garching	Polifke	WS	4
MW2285	Wind Tunnel Testing of Wind Turbines	Garching	Bottasso	WS	4

Scientific Seminar (5 Credits)

EI7770	Elektrophysikalische Probleme in der Mikrostrukturtechnik	Munich	Schrag	WS/SS	5
EI77001	Seminar Embedded Systems and Internet of Things	Munich	Steinhorst	WS/SS	5
EI8016	Seminar on Electrical Actuators	Munich	Herzog	WS/SS	5
EI8042	Seminar on Energy Storage Technologies	Munich	Jossen	WS/SS	5
EI8040	Seminar on Energy Systems and Energy Economy	Munich	Hamacher	WS/SS	5
EI8041	Seminar on High Voltage Technology	Munich	Koch	WS/SS	5
EI8039	Seminar on Intelligent Methods in Mechatronics	Munich	Kennel	WS/SS	5
MW2089	Seminar on Nuclear Safety Principles	Garching	Macián-Juan	WS/SS	5
EI8038	Seminar on Power Transmission	Munich	Witzmann	WS/SS	5
EI8044	Seminar on Renewable and Sustainable Energy Systems	Munich	Hamacher	WS/SS	5
MW1813	Seminar on Thermal Energy Systems	Garching	Spliethoff	WS/SS	5

One of the seminars has to be chosen. If you don't pass the chosen seminar it can be replaced with a different one.

¹ not offered in Winter Semester 2021/22

² not offered in Winter Semester 2021/22

Interdisciplinary Modules (8 Credits)

You have to earn eight credits from interdisciplinary (non-power engineering modules) - the choice is yours.

Not allowed are modules offered by the Department of Electrical and Computer Engineering, excepting the subjects on the recommendation list.

Allowed are all modules offered by the Mechanical Department, which are not part of the curriculum.

Modules offered by other faculties (e.g. TUM School of Management) or language courses are accepted, too.

There are also some subjects which cannot be counted. If you are unsure, please ask the program manager.

Some suggestions are given on the recommendation list:

Recommendation list:

- Seminar on Scientific Writing, EI0504, Prof. Diepold³
- German Language Course "Deutsch als Fremdsprache"

Research Internship (12 Credits)

The nine-week research internship has to be carried out at a chair at the Department of Electrical and Computer Engineering or at the Department of Mechanical Engineering. Each professor of other Departments, who offers an elective module for the Department of Electrical and Computer Engineering, can also be supervisor.

With the agreement of a professor it can also be carried out in industry. However, you can only do one internship. If you want to do more than an internship it cannot be counted on your transcript and it is voluntary.

Master's Thesis (30 Credits)

The six-month Master's Thesis concludes the MSPE program and it also has to be carried out at a chair at the Department of Electrical and Computer Engineering or at the Department of Mechanical Engineering. Each professor of other Departments, who are teaching an elective module for the MSPE program, can also be supervisor. With the agreement of a professor the Master's Thesis can also be carried out in a company.

³ not offered in winter semester 2021/22