Courses MSc Sustainable Energy Technology 2024/25

SET themes and profiles for specialization:

1		Chemistry for sustainable energy systems (PMP+CEC);
2	Theme: Sources, fuels and storage	Engineering for sustainable energy systems (P&F+ET+CEC)+TPM
3		Systems for sustainable heat (ET+P&F+TPM)
4		Electrical power systems (EPE+EES)
5	Theme: System thinking	Application in the built environment (BPS + ET)
6		Energy & society (TIS)

Legend:

- **Core course** — 30 EC
- **Homologation course**
- **Specialization course**

Homologation modules are part of free electives. The total amount of bachelor and homologation courses may not exceed 15 EC.
Homologation is strongly advised, depending on student's background. See information at the online education guide for target groups.
Students need to choose at least 15 EC of specialization courses from this list
Suggestions for specialization courses are indicated for each profile.

Quarter 1

Group	Code	Title	Credits	Timeslot
BE	7LY3M0	Building performance and energy systems simulation	5	C
EE	5LEE0 [1]	Electrical power engineering and system integration	5	D
ME	4SE010	Homologation Heat, Flow and Thermodynamics	2.5	E2, E3
AP Plasma and Materials Processing	3MB010	Physics of Plasma and Radiation	5	A
AP Transport in Permeable Media	3MS010	Advanced fluid dynamics	5	E
BE Building Physics and Services	7XC1M0[6]	Circularity in the built environment	5	A
BE Building Physics and Services	7LY5M0	Intelligent Buildings	5	B
BE Building Physics and Services	7LS3M0	Sustainable Buildings/Physical Aspects of Building Materials	5	A
CEC Macromolecular and Organic Chemistry	6EMA53[4]	Molecular photophysics	5	D
EE Electromechanics and Power Electronics	5LWE0	Control of Rotating Field Machines	5	A
EE Electromechanics and Power Electronics	5LWH0[7]	Modelling & control of power converters	5	C
EE Electrical Energy Systems	5LEL0	Power Quality Phenomena	5	E
IE&IS Innovation,Technology Entrepreneurship & Marketing	1ZM20	Technology entrepreneurship	5	E
IE&IS Technology, Innovation & Society	0EM150	Sustainable transitions and responsible innovation	5	C
ME Power & Flow	4RM00 [5]	Introduction to Computational Fluid Dynamics	5	B

Quarter 2

Group	Code	Title	Credits	Timeslot
ME, AP, B	4EM70 [2]	Sustainable energy sources	5	A
IE&IS	0EM140	Energy, economy and society	5	E
IE&IS Technology, Innovation & Society	0EM230	Globalisation, sustainability and justice	5	D
AP Transport in Permeable Media	3MT160	Introduction to NMR/MRI for imaging and flow visualisation	5	C
BE Building Physics and Services	7S880	Lighting Technology	5	C
BE Building Physics and Services	7ZW5M0	Smart healthy urban environments	5	D
CEC Chemical Engineering and Chemistry	6EMA08	Multiphase computational fluid dynamics	5	A
EE Electromechanics and Power Electronics	5AT010	Electrical components	2.5	C2
EE Electromechanics and Power Electronics	5SWA0	Rotary permanent magnet machines	5	D
EE Electrical Energy Systems	5SEE0	Planning & Operation of Electrical Power Systems	2.5	D2
EE Electrical Energy Systems	5SED0	Electrical energy systems in transition	2.5	C2
ME Power & Flow	4BM30	Modelling combustion	5	D
ME Power & Flow	4BM20[7]	Experimentation for MW	5	E
ME Power & Flow	4BM60[7]	Interfacial transport phenomena for engineering flows	5	D2, D3
ME Energy Technology	4EM10	Gasdynamics	5	B2, B3
ME Energy Technology	4EM40[8]	Heat and flow in microsystems	5	C
ME Energy Technology	4SE20ONL[8]	Microscale modeling of heat storage materials (online)	5	C (exam)

Quarter 3

Group	Code	Title	Credits	Timeslot
EE, IE&IS	5LEF0	System integration project - part 1	x	B
IE&IS Technology, Innovation & Society	0EM210	Governing sustainable technology and innovation	5	A
IE&IS Technology, Innovation & Society	0EM220	Sustainability assessments for emerging technologies and business models	5	D
IE&IS Human Performance Management	1JM60	Leadership of innovation and change	5	B
AP Plasma and Materials Processing	3MP170[7]	Plasma processing science and technology	5	B
AP Plasma and Materials Processing	3MP110	Solar cells	5	D
BE Building Physics and Services	7LS9M0[5][7]	Heat, Air & Moisture Transfer/CFD 1	5	B+C
EE Electromechanics and Power Electronics	5SWB0	Advanced power electronics	5	A
EE Electromechanics and Power Electronics	5XWB0[3]	Electric drive systems	5	B
EE Electrical Energy Systems	5LEG0	Pulsed power technology	5	D
EE Electrical Energy Systems	5SEF0	Smart grids, ICT and electricity markets	5	D2
EE Electrical Energy Systems	5LEA0	Protection and automation of distribution networks	2.5	C
CEC Molecular Catalysis	6EMAC2[4]	Modern concepts in catalysis	5	C
CEC Chemical Reaction Engineering	6EMAC6 [4]	Electrochemical engineering	5	D
ME Power & Flow	4BM50	Introduction to petroleum production	2.5	D
ME Power & Flow	4BM10	Hydraulic turbomachines	5	E
ME Energy Technology	4EM50 [9]	Thermal energy storage	2.5	A2
ME Energy Technology	4SE30ONL[9]	Thermal energy storage and demand (online)	5	A2

Quarter 4

Group	Code	Title	Credits	Timeslot
EE, IE&IS	5LEF0	System integration project - part 2	10	B
AP Transport in Permeable Media	3MT130	Transport in porous media	5	E
BE Building Physics and Services	7LS6M0[5]	Heat, Air & Moisture Transfer/CFD 2	5	E
CEC Chemical Reaction Engineering	6EMA06[4]	Advanced process design	5	B
EE Electromechanics and Power Electronics	5LEJ0	Secondary batteries and hydrogen storage	2.5	A2
EE Electromechanics and Power Electronics	5LWG0	Power electronics for high-precision applications	5	B2
EE Electrical Energy Systems	5XWA0[3]	Power System Analysis and Optimization	5	E
EE Electrical Energy Systems	5LEM0	Dynamic control of power conversion in renewable energy systems	5	E2
EE Electrical Energy Systems	5LEN0	Power System Stability and Dynamics	2.5	C1
IE&IS Information Systems	1BM150	Green and digital transformation: sustainability in the era of AI	5	A
IE&IS Technology Entrepreneurship & Marketing	1ZM65	System dynamics	5	B
ME Power & Flow	4BM40	Optical diagnostics for combustion and fluid flow	5	A
ME Power & Flow	4AT020	Clean engines and future fuels	5	C
ME Energy Technology	4EM80	Monte Carlo Simulations for Energy Applications	5	E

Check actual information about quarter and timeslot in OSIRIS catalogue

[1] Not for students who did 5EWB0 electrical power systems -i n their bachelor's program. These students take an additional specialization course, recommended are Electrical Energy Systems in Transition (2.5 EC) and Planning & Operation of Electrical Power Systems (2.5 EC)

[2] -Homologation 'Heat, Flow and Thermodynamics' is strongly advised for students with a non-mechanical engineering bachelor's program.

[3] Bachelor course, approval depends on bachelor profile and specialization. The total amount of bachelor and homologation courses may not exceed 15 credits

[4] For students with a bachelor in Chem. Eng. or comparable; other students please check the entrance requirements. As prior knowledge for courses 6EMAC6 and 6EMA06, 6P3X0 (Chemical Reactors) is recommended.

[5] When selecting the course 4RM00 the course(s) 7LS9M0 and/or 7LS6M0 cannot be selected

[6] When selecting the course 7XC1M0 the course 0EM310 cannot be selected

[7] This course is scheduled in the same time slot as a core course

[8] When selecting the course 4EM40 the course 4SE20ONL cannot be selected. Written examination on campus.

[9] When selecting the course 4EM50 the course 4SE30ONL cannot be selected. Written examination on campus.

[10] Mandatory specialization course for students specializing within the 'Energy & Society' profile.

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