Courses Master Automotive Technology 2024/25

Core course
Homologation course
Specialization course

30 EC

[1] Notification for students who completed the course 4RC20 Powertrains-ICE during their bachelor program. The course 4AT060 Powertrains will be replaced by the course 5AT010 Electric Components (2.5 EC) and one specialization course (minimum of 2.5 EC) from the list of specialization courses 2022/23

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

Quarter 1

			credits	*timeslot*
IE&IS, ID	0HM310	Automotive societal factors	5	C
ME	4AT090	Smart Vehicles	5	B
MCS	2IHC10	Homologation C++ and Computer Organization	2.5	E1
ME	4SE010	Homologation heat, flow & thermodynamics	2.5	E2
MCS Formal System Analysis	2IX20*	Software specification	5	D1
EE Electromechanics and Power Electronics	5LWE0	Control of rotating field machines	5	A
EE Electromechanics and Power Electronics	5LWH0	Modelling & control of power converters	5	C
EE Electronic Systems	5LIC0	Networked embedded systems	5	A
ME Control Systems Technology	4CM10 [3]	System theory for Control	5	B
ME Dynamics and control	4DM00	Structural dynamics and vibro-acoustics	5	A
ME Mechanics of Materials	4MM00	Composite & light-weight materials: design and analysis	5	A
ME Mechanics of Materials	4MM10	Advanced Computational Continuum Mechanics	5	A
MCS Formal System Analysis	2IMF30	System Validation	5	C1
MCS Formal System Analysis	2IMF25	Automated reasoning	5	B2
MCS Formal System Analysis	2IMF05 [6]	Capita Selecta FSA	5	X
MCS Software Engineering and Technology	2IMP05	Capita selecta software engineering and technology	5	X
MCS Interconnected Resource-aware Intelligent Systems	2IMN10	Architecture of Distributed Systems	5	D
MCS Interconnected Resource-aware Intelligent Systems	2IMN05	Capita selecta system architecture and networking	5	X
ID Future Everyday	DBM140	Embodying Intelligent Behavior in Social Context	5	E
ID Future Everyday	DDM110	Design for Behavioral Change	5	E
IE&IS Human Technology Interaction	0HM110	User experience design (design track A)	5	A

Quarter 2

MCS	2IN70 [2]	Automotive software and computer systems	5	B
ME, EE	4AT060 [1] [2]	sustainable vehicles	5	C
EE Control Systems	5SMC0 [3]	Control principles for engineered systems	5	D1
EE Control Systems	5XWC0*	Energy management	5	A
EE Electromechanics and Power Electronics	5SWA0	Rotary permanent magnet machines	5	D
EE Electronic Systems	5LIG0	Applied Combinatorial Algorithms	5	B1
EE Signal Processing Systems	5SSD0	Bayesian Machine Learning and Information Processing	5	D2; D3
EE Signal Processing Systems	5LSH0	Computer Vision and 3D Image Processing	5	E
ME Control Systems Technology	4SC000	Optimal control and reinforcement learning	5	D
ME Power & Flow	4BM30	Modelling combustion	5	D
ME Power & Flow	4BM20	Experimentation for MW	5	E
ME Dynamics and control	4DM10	Multibody and non-linear dynamics	5	A
ME Energy Technology	4EM70	Sustainable Energy Sources	5	A
ME Mechanics of Materials	4MM20	Computational and Experimental Micromechanics	5	D
MCS Formal System Analysis	2IMF35	Algorithms for model checking	5	A1
MCS Interconnected Resource-aware Intelligent Systems	2IMN20	Real-Time Systems	5	C
MCS Security Group	2IMS20	Cyberattacks crime and defenses	5	E1
MCS Interconnected Resource-aware Intelligent Systems	2IMN15	Internet of things	5	E1, E2

Quarter 3

MCS, ME	4AT100	Automotive systems engineering project - Part 1	x	D
EE Control Systems	5SMB0	System identification	5	C
EE Control Systems	5LMB0	Model predictive control	5	A1
EE Electromechanics and Power Electronics	5XWB0*	Electric drive systems	5	B
EE Electromechanics and Power Electronics	5SWB0	Advanced power electronics	5	A
EE Electromechanics and Power Electronics	5LWF0	FEM for electromagnetic devices	5	D2, D3
EE Electronic Systems	5LIJ0	Embedded control systems	5	E1
EE Electronic Systems	5LIL0	Intelligent Architectures	5	C2
EE Signal Processing Systems	5LSM0	Convolutional neural networks for computer vision	5	E
ME Control Systems Technology	4CM00	Control engineering	5	E
ME Control Systems Technology	4DM20	Engineering Optimization	5	B
ME Control Systems Technology	4CM30 [5]	Supervisory Control	5	D
ME Control Systems Technology	4CM40 [5]	Physical and data-driven modelling	5	D
ME Control Systems Technology	4CM120	Data-based optimization of control systems	5	E
ME Dynamics and control	4AT000 [2]	Vehicle dynamics	5	C
ME Dynamics and control	4DM30	Non-linear control	5	A
ME Energy Technology	4EM30	Scientific computing for MW	5	B
ME Mechanics of Materials	4MM50	Fracture Mechanics: theory and application	5	C
ID Future Everyday	DDM150	User Experience Theory and Practice	5	E
ID Future Everyday	DDM140	Research Methods	5	E
IE&IS Human Technology Interaction	0HM150	Advanced Cognitive Engineering	5	E2, E3

Quarter 4

MCS, ME	4AT100	Automotive systems engineering project - Part 2	10	E
EE Control Systems	5LEJ0	Secondary batteries and hydrogen storage	2.5	A2
EE Electromechanics and Power Electronics	5LWC0	Advanced actuator design	5	A1
EE Electronic Systems	5LIB0	Embedded systems laboratory	5	B
EE Electronic Systems	5LIA0	Embedded visual control	5	A1
EE Signal Processing Systems	5LSL0 [4]	Machine learning for Signal processing	5	A2, A3
ME Control Systems Technology	4CM20	Hybrid systems and control	5	C
ME Control Systems Technology	4AT070	Advanced control for future HD powertrains	5	D
ME Control Systems Technology	4AT030	Advanced Full-Electric & Hybrid Powertrain Design	5	C
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 Dynamics and control	4AT080	Vehicle control	5	B
ME Dynamics and control	4DM70	Analysis and design of networked dynamical systems	5	B
ME Dynamics and control	4SC050	Performance of nonlinear control systems	2.5	A
MCS Software Engineering and Technology	2IMP30	System Design Engineering	5	A2, A3
MCS Software Engineering and Technology	2IMP20	Generic Language Technology	5	A2
IE&IS Human Technology Interaction	0HM280	Human-Robot Interaction	5	C

Check actual information about quarter and timeslot in OSIRIS

[2] Homologation strongly recommended, depending on bachelor's program

[3] To avoid the (partial) content overlap with the course System theory for control (4CM10), students who follow 4CM10 and 5SMCO will be offered a parallel module.

[4] This course has a capacity limit

[5] This course is scheduled in the same timeslot as a core course, but can be followed simultaneously

[6] This course can also be followed in Q2, Q3 and Q4

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

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