Courses 2021-2022 master MW track AIES

Core courses 30 SP

Mathematics 5 SP, Select one course from:

Code	Vak naam/Course name	TS	SP	Quartile
5CTA0	Statistical signal processing	A	5	Q1
2DME20	Non-linear optimization	C	5	Q1
2DME10	Discrete mathematics	B	5	Q1

Learning AI 10 SP

Code	Vak naam/Course name	TS	SP	Quartile
5SSD0	Bayesian machine learning and information processing	D2	5	Q2
5LSL0	Artificial neural networks and deep learning	A2	5	Q4

Fundamentals for Engineering systems 10 SP,
Select two courses from the Engineering Systems Core Topics:

Code	Vak naam/Course name	TS	SP	Quartile
Model based control				
4CM00 or	Control Engineering	C/E	5	Q1/Q3
4CM10 or	System Theory for Control	B	5	Q1
5SMC0	Control principles for engineered systems	D1	5	Q2
Optimization				
4DM20 or	Engineering Optimization	B	5	Q3
2DME20	Nonlinear Optimization	C	5	Q1
Machine Learning for modelling and Design				
4AI000	Machine Learning for modelling and design	E	5	Q4
Dynamical Systems				
4DM10 or	Multi-body and Nonlinear Dynamics	A	5	Q2
5CSA0	Modelling Dynamics	D	5	Q1
Computer architectures for AI				
5LIL0	Intelligent architectures	C2	5	Q3

Human interaction & ethics 5 SP

Code	Vak naam/Course name	TS	SP	Quartile
0LM190	Philosophy and ethics of AI	B1	5	Q2

Professional skills 10 SP

Code	Vak naam/Course name	TS	SP	Quartile
4WM00 or 4WM50	Coaching and tutoring Teamwork and academic writing	X/D	2.5	Q1/Q2/Q3/Q4-Q2/Q3
4WM10	Career development	X	2.5	Q1/Q2/Q3/Q4
5ARA0	Software engineering for artificial intelligence	D2	5	Q3

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Specialization Courses: Select 10 SP from the next threads

Code	Vak naam/Course name	TS	SP	Quartile
Thread Mechanical Engineering				
4BM00	Advanced Engineering Mathematics	E	5	Q1
4BM60	Interfacial Transport Phenomena in Engineering Flows	D2	5	Q1
4DM00	Structural Dynamics and Vibro-acoustics	A	5	Q1
4RM00	Introduction CFD	B1	5	Q1
4BM20	Experimentation for Mechanical Engineering	E	5	Q2
4MM10	Advanced computational continuum mechanics	A	5	Q2
4EM30	Scientific computing for Mechanical Engineering	B	5	Q3
4EM60	Advanced Discretization techniques	B	5	Q4
4UM00	Microfabrication Methods	B/B	5	Q1/Q4
Thread Robotics				
0LAUK0*	Robots Everywhere	A	5	Q1, Q3, Q4
5XSK0*	Data fusion & Semantic interpretation	E	5	Q3
0HM280	Human-Robot interaction	C	5	Q4
4DC00*	Dynamics and Control of Robots	A	5	Q4
4SC020	Mobile robot control	D2	5	Q4
5AUA0	Advanced Sensing using Deep Learning	D1	5	Q4
Thread Automotive Systems				
4AT000	Vehicle Dynamics	B	5	Q1
5XSJ0*	Automotive Sensing	E	5	Q1
5LSM0	Convolutional neural networks for Computer Vision	E	5	Q3
5XSK0*	Data fusion & Semantic interpretation	E	5	Q3
4AT030	Advanced Full-Electric and Hybrid Powertrain Design	C	5	Q4
4AT080	Vehicle Control	B	5	Q4
4AT070	Advanced control for future HD powertrains	D	5	Q4
5AUA0	Advanced Sensing using Deep Learning	D1	5	Q4
Thread Healthy				
5CTA0	Statistical Signal Processing	A	5	Q1
5LSG0	Neuromonitoring	A1	5	Q2
4UM10	Micro fluidics put to work	A	5	Q3
5LSC0	Biomedical sensing technology	A2	5	Q3
5SSC0	Adaptive array signal processing	B1	5	Q3
5LSJ0	Image analysis for health-care technologies	D	5	Q3
4UM00	Microfabrication Methods	B/B	5	Q1/Q4
Thread High-tech Systems & Mechatronics				
4DM00	Structural Dynamics and Vibro-acoustics	A	5	Q1
4CM60	Advanced Motion Control	B	5	Q2
4DM10	Multi-body and Nonlinear Dynamics	A	5	Q2
4SC050	Performance of Nonlinear Control Systems	A	2,5	Q4
5LMD0	Selected topics in Systems and Control	E2	2,5	Q4

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Thread Learning in Systems and Control				
5CTA0	Statistical Signal Processing	A	5	Q1
4SC000	Optimal Control and reinforcement learning	D	5	Q2
4CM30	Supervisory Control	D	5	Q3
4CM80	Extremum Seeking control	C	2,5	Q3
4DM70	Dynamics and control of Cooperation	B	5	Q4
5SMB0	Identification	C	5	Q3
4SC070	Learning Control	D	5	Q4
5SC28	Machine Learning for Systems and Control	B	5	Q4

Elective 10 SP
These courses can be freely chosen from all TU/e master level courses.

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