

Master programme Civil Engineering and Management

2016-2017

update February 2017

Construction Management and Engineering			Transport Engineering and Management			Water Engineering and Management			Integrated Civil Engineering Systems					
Markets and Organization in Construction			Transport Planning and Modeling			Integrated Water Management			Civil Engineering Structures			Modeling and Forecasting		
Profile Courses (minimum 30 EC)	EC	Quartile	Profile Courses (minimum 30 EC)	EC	Quartile	Profile Courses (minimum 30 EC)	EC	Quartile	Profile Courses (30 EC)	EC	Quartile	Profile Courses (minimum 30 EC)	EC	Quartile
Research Methodology & Academic Skills (mandatory)	7,5	2	Transport Research Project (mandatory)	7,5	any	at least 4 of the following 5 courses:			Sustainable Building	7,5	1	Transport Modeling	7,5	2
at least 3 of the following 4 courses:			at least 3 of the following 4 courses:			Hydrology	7,5	1	Morphology (pr.knowl: Marine Dynamics)	7,5	2	Design Project Water II	7,5	2
Planning and Process Management	7,5	1	Planning and Process Management	7,5	1	Water Footprint Assessment	7,5	1	Research Methodology & Academic Skills	7,5	2	Tools for Water Policy Analysis	7,5	3
Legal & Governance Aspects	7,5	1	Transport Modeling	7,5	2	Design Project Water II	7,5	2	Geo Risk Management	7,5	3	Mathematical Optimization in Transport	7,5	3
Project Management	7,5	2	Land Use and Transport Interactions	7,5	3	Tools for Water Policy Analysis	7,5	3	Hydraulic Engineering	7,5	4	Mathematical Physics of Water Systems	7,5	3
Collaborative Design & Engineering	7,5	3	Sustainable Transport	7,5	4	Integrated Water Management	7,5	4				Transport Research Project		any
												Morphology (pr.knowl: Marine Dynamics)	7,5	2
Profile Electives			Profile Electives			Profile Electives			Profile Electives			Profile Electives		
- Free to choose any of the 35 CEM-courses (pay attention to the required prior knowledge)			- Free to choose any of the 35 CEM-courses (pay attention to the required prior knowledge)			- Free to choose any of the 35 CEM-courses (pay attention to the required prior knowledge)			- Free to choose any of the 35 CEM-courses (pay attention to the required prior knowledge)			- Free to choose any of the 35 CEM-courses (pay attention to the required prior knowledge)		
- Below: list of CEM-courses that fit best in this profile (in addition to profile courses)			- Below: list of CEM-courses that fit best in this profile (in addition to profile courses)			- Below: list of CEM-courses that fit best in this profile (in addition to profile courses)			- Below: list of CEM-courses that fit best in this profile (in addition to profile courses)			- Below: list of CEM-courses that fit best in this profile (in addition to profile courses)		
- Below: courses from other programmes that fit in this profile (If you include courses from other programmes, we recommend you to make a selection, such that the majority of the programme is still formed by CEM-courses)			- Below: courses from other programmes that fit in this profile (If you include courses from other programmes, we recommend you to make a selection, such that the majority of the programme is still formed by CEM-courses)			- Below: courses from other programmes that fit in this profile (If you include courses from other programmes, we recommend you to make a selection, such that the majority of the programme is still formed by CEM-courses)			- Below: courses from other programmes that fit in this profile (If you include courses from other programmes, we recommend you to make a selection, such that the majority of the programme is still formed by CEM-courses)			- Below: courses from other programmes that fit in this profile (If you include courses from other programmes, we recommend you to make a selection, such that the majority of the programme is still formed by CEM-courses)		
Supply Chain Management & ICT	7,5	1	Legal & Governance Aspects	7,5	1	Water Systems	7,5	1	Design Project Water II	7,5	2	Hydrology	7,5	1
Markets, Organizations & Innovation	5-7,5	2	Public Transport in urban areas	7,5	2	Legal & Governance Aspects	7,5	1	Data Analysis in Water Engineering & Management	7,5	2	Marine Dynamics (prior knowledge: Math.Physics of WS)	7,5	1
Procurement Strat&Tend (pr.knowl: Project Man.)	7,5	3	Data Science (EWI) + assignment	7,5	2 or 3	Planning and Process Management	7,5	1	Mathematical Physics of Water Systems	7,5	3	Traffic Operations	7,5	2
Industrialization & Innovation in Construction	7,5	4	Mathematical Optimization in Transport	7,5	3	Data Analysis in Water Engineering & Management	7,5	2	Collaborative Design & Engineering	7,5	3	Data Analysis in Water Engineering & Management	7,5	2
Infrastructure Management	7,5	4	Infrastructure Management	7,5	4	Collaborative Design & Engineering	7,5	3	Building Information Modeling & 5D Planning	7,5	3	Morphology (prior knowledge: Marine Dynamics)	7,5	2
						Infrastructure Management	7,5	4				Data Science (EWI) + assignment	7,5	2 or 3
Maintenance Engineering and Management (ME, IEM)	5	1	Policy Instr and Evaluation in Environ+Sust. (PA)	5	1	Policy Instr and Evaluation in Environ+Sust. (PA)	5	1	Introduction to Finite Elements (part mod11 WB)	± 3	3	Building Information Modeling & 5D Planning	7,5	3
Organization & Strategy (IEM)	5	2	Policy Analysis in Public and Technol.Domains (PA)	5	1	Policy Analysis in Public and Technol.Domains (PA)	5	1	Numerical Methods in ME (ME; prior knowledge: Intro FE)	5	1-2	Traffic Management	7,5	4
Cost Management and Engineering (IEM)	5	2	Methods of Sustainability Assessment (PA)	5	1	Economic Methods of Sustainability Assessment (PA)	5	1	Linear Solid Mechanics (ME)	5	3	River Dynamics (prior knowledge: Math.Physics of WS)	7,5	4
Supply Chain & Transportation Management (IEM)	5	3	Public Governance & Policy Networks (PA)	5	3	Public Governance & Policy Networks (PA)	5	3	Nonlinear Solid Mechanics (ME; prior knowledge: linear SM)	5	4	Statistics and Probability (IEM)	5	1
Reliability Engineering & Maintenance Mgmt (IEM)	5	3	Stochastic Models (part of module 8, BSc-TW)	± 6	4	Policy Strat.&Impl. for Water Govern+Sust. Issues (MEEM)	4	1	Dynamics 2 & knik (mod 8 WB)	± 4,5	4	Simulation (IEM; follow up of Module 8 CIT/TBK)	5	1-2
			Markov Chains and Stoch.Sim. (part of mod 8, BSc-TW)	± 6	4	Sustainable Management Strat. and Innovation (MEEM)	4	1	Structural Health and Condition Monitoring (ME)	5	4	Numerical Methods in ME (ME; prior knowledge: Intro FE)	5	1-2
			Simulation (IEM; follow up of Module 8 CIT/TBK)	5	1-2	Energy Management, Policy and Technology (MEEM)	4	2	Failure Mechanisms & Life Prediction (ME)	5	2	Discrete Optimization (AM)	5	1
			Technology and Sustainable Development (SET)	3	1	Environment and Technology (MEEM)	4	2	Optimization Modelling (AM)	6	3	Optimization Modelling (AM)	6	3
			Statistics and probability (IEM)	5	1	Data Science (EWI)	5	2 or 3	Scientific Computing (AM)	6	3	Scientific Computing (AM)	6	3
			Discrete Optimization of Business Processes (IEM)	5	1				Introduction to Finite Elements (part mod11 WB)	± 3	3	Theory of Partial Differential Equations (AM)	5	3
			Discrete Optimization (AM)	6	1				Data Science (EWI)	5	2 or 3	Applied Finite Elements for PDE (AM)	6	3
			Optimization Modelling (AM)	6	3									
			Scientific Computing (AM)	6	3									
Design Management in Construction			Smart Transport Systems			River and Coastal Engineering			Sustainability			Smart Cities		
Profile Courses (minimum 30 EC)	EC	Quartile	Profile Courses (minimum 30 EC)	EC	Quartile	Profile Courses (minimum 30 EC)	EC	Quartile	Profile Courses (30 EC)	EC	Quartile	Profile Courses (minimum 30 EC)	EC	Quartile
Research Methodology & Academic Skills (mandatory)	7,5	2	Transport Research Project (mandatory)	7,5	any	at least 4 of the following 6 courses:			Sustainable Building	7,5	1	Planning and Process Management	7,5	1
at least 3 of the following 4 courses:			at least 3 of the following 4 courses:			Water Systems	7,5	1	Water Footprint Assessment	7,5	1	Research Methodology & Academic Skills	7,5	2
Planning and Process Management	7,5	1	Traffic Operations	7,5	2	Hydrology	7,5	1	Research Methodology & Academic Skills	7,5	2	Land Use and Transport Interactions	7,5	3
Legal & Governance Aspects	7,5	1	Mathematical Optimization in Transport	7,5	3	Marine Dynamics (prior knowledge: Math.Physics of WS)	7,5	1	Sustainable Transport	7,5	4	Integrated Water Management	7,5	4
Project Management	7,5	2	Traffic Management	7,5	4	Morphology (pr.knowl: Marine Dynamics)	7,5	2						
Collaborative Design & Engineering	7,5	3				Mathematical Physics of Water Systems	7,5	3						
						River Dynamics (prior knowledge: Math.Physics of WS)	7,5	4						
Profile Electives			Profile Electives			Profile Electives			Profile Electives			Profile Electives		
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Sustainable Building	7,5	1	Public Transport in urban areas	7,5	2	Data Analysis in Water Engineering & Management	7,5	2	Legal & Governance Aspects	7,5	1	Legal & Governance Aspects	7,5	1
Building Information Modeling & 5D Planning	7,5	3	Data Science (EWI) + assignment	7,5	2 or 3	Design Project Water II	7,5	2	Collaborative Design & Engineering	7,5	3	Sustainable Building	7,5	1
Project Control and Risk Management	7,5	3	Sustainable Transport	7,5	4	GeoRiskManagement	7,5	3	Land Use and Transport Interactions	7,5	3	Public Transport in urban areas	7,5	2
Industrialization & Innovation in Construction	7,5	4				Hydraulic Engineering	7,5	4	Integrated Water Management	7,5	4	Data Science (EWI) + assignment	7,5	2 or 3
Infrastructure Management	7,5	4										Collaborative Design & Engineering	7,5	3
												Sustainable Transport	7,5	4
Governing Product development (IDE)	5	1	Technology and Sustainable Development (SET)	3	1	Fluid Mechanics II (ME)	5	1	Electrical power engineering + system integration (SET)	4	2	Traffic Management	7,5	4
Maintenance Engineering and Management (ME, IEM)	5	1	Statistics and probability (IEM)	5	1	Transport Phenomena (ME; prior knowledge Fluid Mech. II)	5	1	Product Life Cycle (IDE)	5	2	Energy Systems (SET)	3	1
Product Life Cycle (IDE)	5	2	Discrete Optimization of Business Processes (IEM)	5	1	Numerical Methods in ME (ME; prior knowledge: Intro FE)	5	1-2	Wind Energy (SET)	4	3	Technology and Sustainable Development (SET)	3	1
Scenario based product design (IDE)	5	2	Discrete Optimization (AM)	6	1	Data Science (EWI)	5	2 or 3	Electric Vehicle System Design (IDE)	4	2	Electric Vehicle System Design (IDE)	5	2
Cost Management and Engineering (IEM)	5	2	Electric Vehicle System Design (IDE)	5	2	Wave Motion (ME)	5	2	Wind Energy (SET)	4	3	Wind Energy (SET)	4	3
Product Life Cycle Management (IDE)	5	3	Optimization Modelling (AM)	6	3	Turbulence (AP)	5	2	Solar Energy (SET)	4	3	Solar Energy (SET)	4	3
Reliability Engineering & Maintenance Mgmt (IEM)	5	3	Supply Chain & Transportation Management (IEM)	5	3	Theory of Partial Differential Equations (AM)	5	3	Energy and Economy (SET)	4	3	Solar Energy (SET)	4	3
Design for Maintenance Operations (IDE)	5	3	Simulation (IEM; follow up of Module 8 CIT/TBK)	5	1-2	Introduction to Finite Elements (part mod11 WB)	± 3	3	Energy Systems (SET)	3	1	Energy and Economy (SET)	4	3
Advanced 3D Modelling (IDE)	5	3	Scientific Computing (AM)	6	3	Applied Finite Elements for PDE (AM)	6	3	Technology and Sustainable Development (SET)	3	1	Virtual Reality (IDE)	5	4
Virtual Reality (IDE)	5	4	Stochastic Models (part of module 8, BSc-TW)	± 6	4	Comp.Fluid Dynamics (ME; pr.knowl: numerical methods)	5	4	Policy Instr and Evaluation in Environ+Sust. (PA)	5	1			
LEAN Six-Sigma Green Belt (ME)	5	4	Markov Chains and Stoch.Sim. (part of mod 8, BSc-TW)	± 6	4				Economic Methods of Sustainability Assessment (PA)	5	1			
									Policy Strat.&Impl. for Water Govern+Sust. Issues (MEEM)	4	1			
									Energy management, policy and technology (MEEM)	4	2			
									Data Science (EWI)	5	2 or 3			
GENERAL COURSES														
Free Electives (max 15 EC)	EC	Quartile	Free Electives (max 15 EC)	EC	Quartile	Free Electives (max 15 EC)	EC	Quartile	Free Electives (max 15 EC)	EC	Quartile	Free Electives (max 15 EC)	EC	Quartile
Any course from UT or approved other university*			Any course from UT or approved other university*			Any course from UT or approved other university*			Any course from UT or approved other university*			Any course from UT or approved other university*		
Thesis **	EC	Quartile	Thesis **	EC	Quartile	Thesis **	EC	Quartile	Thesis **	EC	Quartile	Thesis **	EC	Quartile
Preparation Master Thesis	7,5	-	Preparation Master Thesis	7,5	-	Preparation Master Thesis	7,5	-	Preparation Master Thesis	7,5	-	Preparation Master Thesis	7,5	-
Master Thesis Construction	30	-	Master Thesis Traffic	30	-	Master Thesis Water	30	-	Master Thesis Construction/Traffic/Water	30	-	Master Thesis Construction/Traffic/Water	30	-
PLANNING AND CONSULTATION FOR THE MASTER PROFILES														
Track-coordinator: drs. ing. Hans Boes	Track-coordinator: prof. dr. ir. Eric van Berkum			Track-coordinator: dr. ir. Denie Augustijn			Track-coordinator: dr. Jord Warmink							
Coordinator Master Theses: dr. ir. Robin de Graaf	Coordinator Master Theses: prof. dr. ir. Eric van Berkum			Coordinator Master Theses: dr. ir. Martijn Booi			Coordination of Master Theses: see coordinators from CME, TEM or WEM							

* an "approved university" is any university in The Netherlands (not HBO-schools), or any international university that is partner of the UT or of the faculty of Engineering Technology.

For a list of partner universities, see: <https://www.utwente.nl/ctw/student-mobility/partners/>

For courses from other universities: contact your track-coordinator. The Free Electives should be at MSc-level and should have no overlap with other courses in your programme.

** For the procedure of how to start the course Preparation Master Thesis and your MSc-thesis project, see: https://www.utwente.nl/cem/master_programme/graduate/