30 EC packages - Additional Specialisations for Engineering Students

An additional specialisation gives you the chance to personalise your study programme. One of the below mentioned packages, compiling 30EC, can be registered on your diploma supplement after completion. If you are interested and have any questions please contact the programme coordinator (n.vanderveen@utwente.nl).
- Choose the package and courses you want to take and check the required prior knowledge. Obligatory courses of your IEM specialisation and orientation are not allowed as package courses;
- Add the chosen courses to your study programme (forms are avaliable on the IEM-programme Canvas site). Make sure your Additional Specialisation adds up to a **30EC** package;
- Add other electives so your study programme adds up to 120 EC;
- Discuss your programme with your specialisation coordinator for approval.

Please pay attention to the required prior knowledge. Check the Osiris Course Catalogue for more information per course.

Packages only for IEM students

Civil Engineering and Management

Course Code	Transport Engineering	Qrt
201800064	Traffic Operations	1
201800045	Construction Supply Chain and Digitization	1
201800070	Public Transport Modeling	2
201800060	Sustainable Transport	2
201800068	Network Modelling and Forecasting	3
201800065	Traffic Management	3
201800010	Transportation and logistics Management (IEM)	3
202001463	Mathematical Optimization in Transport	4

* Only and mandatory for students with no CE-background
** Prior Knowledge for Hydrological Modelling and Forecasting

Course Code	Water Management	Qrt
201800120	Capita Selecta 'Introduction Water Management' *	1/2
201800017	Water Footprint Assessment	1
201800018	Hydrology **	1
201800019	Hydrological Modelling and Forecasting	2
202100125	Sustainable Engineering	2
202200043	Circular Systems Engineering	3
201900034	Urban Resilience in a changing climate	3
202300274	Integrated Water Management	3
201800039	Building with Nature	4
201800033	Water and Climate	4

Industrial Design Engineering

Course Code	Management and Design	Qrt
192850910	Packaging Design and Management 1	1
192850840	Sources of Innovation	1
192850740	Product Life Cycle	2
202100156	Conceptual Design Methods	3
201200137	Design Histories	3
192850750	Product Life Cycle Management	3
201700008	Design and Behaviour Change	4

Business & IT

Course Code	Information Systems & Management	Qrt
201400277	Enterprise Architecture	1
192376500	Business Process Integration Lab	2
192320501	Electronic commerce	2
202000027	Enterprise Security	2
201100051	Information Services	3
192340101	Implementation of IT in organizations	3
192360021	ICT Management	3
192376000	Business Case Development for IT Projects	4
202000028	Smart Industry Systems	4

Mechanical Engineering

Course Code	Maintenance	Qrt
201200146	Maintenance Engineering and Management	1
201300038	Failure Mechanisms & Life Prediction	2
201800008	After-Sales Service Logistics (IEM)	2
201800009	Advanced Inventory Management (IEM)	2
191852630	Reliability Engineering & Maintenance Management (IEM)	3
201500235	Design for Maintenance Operations (IDE)	3
201300039	Structural Health & Condition Monitoring	3
191155730	Tribology	3
191102010	Life-cycle Strategy	4
201800034	Infrastructure Asset Management (CEM)	4

Social Science: Business Administration*

Course Code	Technology Venturing and Innovation Management	Qrt
201500083	Change Management and Consultancy in a Global Context*	1
201600012	Management and Governance of Innovation and Creativity*	1
201600011	International Entrepreneurship*	1
201600002	Entrepreneurial Leadership & Responsible Organizational Design*	1
192320501	Electronic Commerce (BIT)	2
201600155	Global Strategy and Business Development*	3
201000087	Entrepreneurial Finance*	3
201600015	Strategic Technology Management and Innovation	3

* These courses are only permitted as part of a 30EC package

Packages for IEM and other Engineering or Science Students

Additional

Course Code	Logistics Management Engineering	Qrt	Course Code	Health Care Engineering	Qrt
	Mandatory courses				
201800003	Operations Research Techniques 1 (ORT1) *	1+3	201800003	Operations Research Techniques 1 (ORT1) *	1+3
202300064	Simulation **	1	202300064	Simulation **	1
	Elective courses				
201700089	Circular Sustainable Business Development	1	201800005	Applied Statistical Learning	1
191506103	Statistics & Probability	1	201700089	Circular Sustainable Business Development	1
201800008	After-Sales Service Logistics	2	191506103	Statistics & Probability	1
201800009	Advanced Inventory Management	2	201600032	Quality Management in Healthcare (HS)	2
201800010	Transportation and logistics Management	3	201700196	Advanced Discrete Event Simulation	3
194121020	Optimization of Healthcare Processes	3	194121020	Optimization of Healthcare Processes	3
191852630	Reliability Engineering & Maintenance Mngt	3	201600015	Strategic Technology Mngmt & Inn	3
202300332	Stochastic Optimization and Learning	4	201700197	Decision Making in HC	4
201800007	Planning & scheduling	4	202300332	Stochastic Optimization and Learning	4
191820120	Warehousing	4	191820120	Warehousing	4

* ORT1: Basics OR, a programming language, i.e Delphi, Excel/BVA. MATLAB is sufficient only if you are familiar with programming options (scripts, functions and applications) of the program. Extra material available on CANVAS
** Simulation: Basic statistics (probability distribution functions, standard deviation, mean, confidence intervals, etc.). Basic computer programming (if-then constructs, for-loops, local and global variables, functions, procedures, etc.).

Course Code	Financial Engineering	Qrt	Course Code	Sustainability in IEM	Qrt
	Mandatory courses			**Mandatory courses**	
191506103	Statistics & Probability	1	201700089	Circular Sustainable Business Development **	1
201300060	Mathematical Finance	2		**Elective courses**	
	Elective courses		202200057	Sustainable Transportation Infrastructure (CEM) *	1
191860651	Micro Economics	1	202200263	Optimisation of Sustainable Energy Systems	2
191521800	Game Theory	1	201800126	Distributed Energy Management for Smart Grids (EMSYS)	2
201400244	Cost Management and Engineering	2	201800060	Sustainable Transport (CEM)	2
201200138	Special Topics in Financial Engineering	2	202100125	Sustainable Engineering (CEM)	2
191515101	Introduction to Risk Theory	2	202001505	Energy Conversion: People, Planet, Prosperity (EE)	4
191860181	Risk Management	3	202200310	Introduction to Humanitarian Engineering (ME)	4
201300062	Structured Products	3	191102010	Life-cycle Strategy (ME) *	4
201000202	Management Control for Financial Institutions	4			
201100162	Applied Financial Engineering	4			

* Due to partial overlap the student can choose only 1 of these courses
** From 24/25 this course will be given in Quartile 3