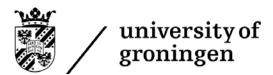


Appendices to the Teaching and Examination Regulations of the Master's degree programme in

Industrial Engineering and Management

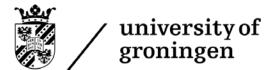
(2016-2017)



Appendix I Learning outcomes of the degree programme (art. 1.3)

After the master's degree programme Industrial Engineering and Management students have:

- 1. The knowledge to describe complex and advanced technological processes and products in a managerial/business context.
- 2. The understanding to diagnose the functionality and performance of such processes and products in a multi-disciplinary way (e.g. technological, managerial and from viewpoint of various stake-holders).
- 3. The skills to (re)design, implement and then evaluate such processes and products.
- 4. The knowledge, understanding and skills for doing research, i.e. applying industrial engineering methodologies in research.
- 5. The knowledge, understanding and skills for life-long learning (including information retrieval and ICT-use) needed to function autonomously.
- 6. The skills to think critically and communicate scientifically about ideas and solutions with engineers and managers.
- 7. The knowledge and understanding of advanced technology, managerial/business sciences and mathematics to do research and to enter a PhD-program in Industrial Engineering or a related discipline.
- 8. Professional skills for managerial, societal and ethical behaviour when applying technology.



Appendix II Specializations of the degree programme (art. 2.2)

The master's programme Industrial Engineering and Management contains two tracks:

- Production Technology and Logistics (PTL)
- Product and Process Technology (PPT)



Appendix III Content of the degree programme (art. 2.3)

Appendix in Content of the degree			programme (art.
Course unit	ECTS	Practical	Entry requirements
Core programme	75		
Technology Based	5	Yes	
Entrepreneurship			
Sustainability for Engineers	5	Yes	
Systems Engineering	5	Yes	
Master's Design Project IEM	25	Yes	 Research Methodology; 45 ECTS of Master's IEM programme must have been completed.
Master's Research Project IEM including Scientific Integrity module	30	Yes	Research Methodology;45 ECTS of Master'sIEM programme must have been completed.
Research Methodology	5		
PTL-Track	45		
Foundations of Logistics Systems Engineering	5	Yes	
Simulation of Logistic Systems	5	Yes	
Robotics	5	Yes	
Surface Engineering & Coating Technology	5	Yes	
Analysis and control of smart systems	5		
Optional Modules	20	Var	
PPT-track	45		
Interfacial Engineering	5		
Bio-based products	5		
Polymer Products	5	Yes	
Advanced product engineering	5	Yes	
Physical transport phenomena 2	5		
Optional Modules	20	Var	

Appendix IV & V: Electives (art. 2.4) & Entry requirements and compulsory order of examinations (art. 3.4)

Within the PTL and PPT tracks of the IEM degree programme, there are 3 and 2 specializations, respectively. The IE track does not have any further specialization.

The specializations of PTL are:

- Production Logistics Engineering (PLE)
- Advanced Production Engineering (APE)
- Smart Systems in Control and Automation (SSCA)

The specializations of PPT are:

- Chemical Engineering (CE)
- Biotechnology (BT)

Each of these specializations are characterized by their own specific optional technical modules, shown in the tables below. Each specialization consists of packages of optional technical modules for which a logical connection exists. All IEM students should choose at least 15 ECTS technical module(s) of their specialization.

The remaining choice (5 ECTS) can be made from optional technical modules of other specializations within the track or from the list of optional management modules.

For type of examination, prerequisites, course format and other details, see http://www.rug.nl/ocasys.

Optional technical modules Production Logistics Engineering (PTL)						
Course unit ECTS Practical Entry requirements						
Planning and Scheduling	5					
Methods						
Data-driven Business	5	Yes				
Innovation						
Asset Management	5	Yes				

Optional technical modules Advanced Production Engineering (PTL)						
Course unit	ECTS Practical Entry requirements					
Multi-scale Contact Mechanics	5	Yes				
& Tribology						
Product design by the finite	5	Yes				
element method						
Characterization of Materials	5	Yes				
Structure at Macro, Meso and	5					
Nano Scale						
Device Physics	5					
Mechanical properties	5					
Numerical mathematics I	5	Yes				

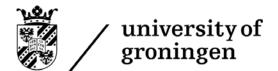


Optional technical modules Smart Systems in Control and Automation PTL			
Course unit	ECTS	Practical	Entry requirements
Fitting dynamical models to data	5	Yes	
Modeling and Control of Complex	5		
Nonlinear Engineering Systems			
Advanced Digital and Hybrid	5	Yes	
Control Systems			
Mathematical Modelling	5		
Calculus of Variations and Optimal	5		
Control			

Optional technical modules Chemical Engineering (PPT)			
Course unit	ECTS	Practical	Entry requirements
Process design	10	Yes	
Particulate Products	5	Yes	
Catalysis for Engineers	5		
Design of industrial catalysts	5	Yes	
Advanced polymer processing	5		
Food Pharma products	5		
Product focused process design	5	Yes	

Optional technical modules Biotechnology (PPT)					
Course unit ECTS Practical Entry requirements					
Bioprocess Technology	5	Yes			
Food Pharma products	5				
Applied Biocatalysis and	5				
Bioconversion					

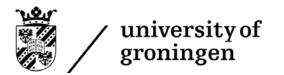
Optional management modules (EB-courses)	ECTS	Practical (Ocasys)	Entry requirements (Ocasys)
Business Ethics□	5		
Healthcare Operations□	5		
Managerial Decision Making and Control□	5		
Operations Management in Process Industry□	5		
Responsible Finance and Investing□	5		
Simulation of Logistic Systems □	5		
Strategic Management & Technology□	5		
Inventory Management□	5		
Process Improvement and Change□	5		
Behavioural Finance & Personal Investing□	5		
Behavioural Operations Management□	5		
Finance and Development□	5		
Innovation & Entrepreneurship□	5		



Appendix VI Admission to the degree programme and different specializations

(art. 5.1.1 + art. 5.2)

- Holders of a Bachelor's degree in Industrial Engineering and Management from the University of Groningen. Admission is profile specific.
- Holders of a Dutch or foreign Bachelor's or Master's degree with equivalent learning outcomes as the Bachelor's degree programme Industrial Engineering and Management of the University of Groningen.



Appendix VII Application deadlines for admission (art. 5.6.1)

Deadline of Application	Non-EU	EU students
	students	
Nanoscience	February 1st 2017	May 1 st 2017
Behavioural and Cognitive Neurosciences	May 1st 2017	May 1st 2017
Biomolecular Sciences (topprogramme)	May 1st 2017	May 1st 2017
Evolutionary Biology (topprogramme)	May 1st 2017	May 1st 2017
Remaining FMNS Masters	May 1st 2017	May 1st 2017

Decision deadlines (art. 5.6.3)

Deadline of Decision	Non-EU	EU students
	students	
Nanoscience	June 1st 2017	June 1st 2017
Behavioural and Cognitive Neurosciences	June 1st 2017	June 1st 2017
Biomolecular Sciences (topprogramme)	June 1st 2017	June 1st 2017
Evolutionary Biology (topprogramme)	June 1st 2017	June 1st 2017
Remaining FMNS Masters	November 1st 2017	November 1st 2017