Appendices of the Teaching and Examination Regulations of the Master's degree programme in Industrial Engineering and Management (2013-2014)

Content:

I. Teaching outcomes of the degree programme *Industrial Engineering and Management*:

After the master's degree programme 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.

II. Tracks of the degree programme

The master's programme of Industrial Engineering and Management three tracks; the PTL – track contains two specializations:
- Production Technology and Logistics (PTL)
- Information Engineering (IE)
- Product and Process Technology (PPT)

III/V. Content of the degree programme, entry requirements and compulsary order of examinations

Module	ECTS	Practical work	Examination form[1]	Prerequisites[2]
Core programme	**80**			
Sustainability for Engineers	5	Yes	ASS	
Asset Management	5	Yes	WE/ASS	
Systems Engineering	5	Yes	ASS	
Research Methodology	5	Yes	ASS	
Business Project (incl. project management)*	25	Yes	ASS	
Master's thesis Research	35	Yes	ASS	Research Methodology, a minimal study-load of 60 ECTS of the master's IEM programme
PTL-Specialization	**40**			
Foundations of Logistic Systems Engineering	5		WE	
Simulation of Logistic Systems	5	Yes	ASS	
Robotics	5		WE	
Analysis and control of	5		WE	

smart systems				
Optional Modules	20	Var	Var	
IE-Specialization	**40**			
Distributed Systems	5	Yes	WE/ASS	
Software Architecture	5	Yes	ASS	
ICT management & consultancy	5	Yes	OE & ASS	
Business Intelligence	5	Yes	OE & ASS	
Sustainable and Integrated Information Systems	5	Yes	ASS	
Optional Modules	15	Var	Var	
PPT-Specialization	**40**			
Interfacial Engineering	5		WE	
Bio-based products	5		ASS	
Powder technology *OR* Polymer Products	5	-/Yes	WE/ASS	
Process Design	10	Yes	ASS	
Transport phenomena 2	5		WE	
Advanced product engineering	5	Yes	ASS	
Optional Module	5	Var	Var	

[1)]WE: Written examination, OE: Oral examination, ASS: assignment including report and/or presentation, Var: various; [2)] entry requirements and compulsory order of examinations

* As an alternative for the Business Project students can also choose to follow optional modules , either from the list of optional modules described below or at a university abroad.

IV. Optional modules: PTL and IE students should choose *at least* resp. two and one technical module(s) from this list; for PPT students there are no restrictions. For type of examination, prerequisites, course format and other details, see http://www.rug.nl/ocasys/.

Period	Type	Code	Course name	Language	ECTS
semester I	management	EBB881A10	Spec. Course Finance	English	10
semester I a	management	EBB607A05	Business Law	Dutch	5
	management		Business Ethics	English	5
	management		Strategic Marketing	English	5
	Technical PTL	NADP-08	Device physics (C)	English	5
	Technical PTL	WIMOD-08	Mathematical modelling	English	5
semester I b	management	EBB647B05	Organisation technology and Change	Dutch	5
	management		Managerial Decision Making and Control	English	5
	management		Responsible Finance and investing	English	5
	Technical PPT		Operations management in the Process Industry	English	5
	management		Strategic Management of Technology	English	5
	Technical IE	INBGAD-10	Advanced Algorithms and Data Structures	English	5

	Technical	TBIEMPR-08	IEMproject	English	5
	Technical IE	INMNN-08	Neural networks	English	5
	Technical PTL	TBPDFEM-10	Product design by the finite element method	English	5
	Technical IE	INMSP-08	Software patterns	English	5
	Technical PTL	WIVOB-09	Calculus of Variations and Optimal Control (B)	English	5
	Technical IE/PPT	TBSLS05E	Simulation of Logistic Systems	English	5
semester II a	Management	EBB609A05	Business & Supply Chain Marketing	English	5
	Management	EBB669A05	Quality Management	English	5
	Management		Inventory management	English	5
	Management		Process improvement and Quality Control	English	5
	Technical PPT	NAPMS05E	Principles of measurement systems	English	5
	Technical PTL		Modeling and Control of Complex Nonlinear Engineering Systems	English	5
	Technical		Supply Chain Optimization	English	5
	Technical PPT	CHTMFR105E	Multiphase Reactors	English	5
	Technical IE	INMMOB-08	Mobile software	English	5
semester II b	management	EBB608A05	Business Ethics & Corporate Social Resp.	English	5
	Management		Behavioral Finance & Personal Investing	English	5
	Management		Behavioral Operations management	English	5
	Management		Finance and development	English	5
	Management		Innovation & entrepreneurship	English	5
	Management		Service Operations	English	5
	Technical PPT	CHCE-09	Catalysis for engineers	English	5
	Technical PTL	KIM.CE11	Cognitive engineering	English	5
	Technical PTL	TBAFPE-11	Fitting Dynamical Models to Data	English	5

VI. Admission to the degree programme and different specializations

- 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.