university of groningen / faculty of science and engineering / industrial engineering and management

Appendices to the Teaching and Examination Regulations for the Bachelor's degree programme in Industrial Engineering and Management (2026-2027)

Appendix I. Learning outcomes of the Bachelor's degree programme (Art. 3.1.1)

Holders of a Bachelor's degree in Industrial Engineering and Management have:

1. The required knowledge to describe elementary technological products and processes within a business context.
2. The required understanding to determine and assess the functionality and performance of these products and processes in a multidisciplinary way (e.g. from technological and business perspectives as well as those of a variety of stakeholders).
3. The required skills to design, redesign, implement and subsequently validate these products and processes.
4. The required knowledge, understanding and skills for 'Life-Long Learning' (including finding information and using IT applications) to function largely autonomously.
5. The required knowledge and understanding of technology, business studies, mathematics and natural sciences to successfully complete a Master's degree programme in Industrial Engineering.
6. An academic attitude, i.e. the required knowledge, understanding and skills to conduct elementary academic research.
7. The required skills to communicate effectively about ideas and solutions with both engineers and managers.
8. Basic knowledge in the field of leadership, socially and ethically responsible behaviour in order to apply technology.

Appendix II. Majors and Minors of the Bachelor's degree programme (Art. 3.7.4 and 7.1.3)

The degree programme has the following Majors, referred to as specialisations:

1. PTL - Production Technology and Logistics
2. SPE - Sustainable Process Engineering

The degree programme has no official minors, but offers a selection of deepening courses and other minor options explained in Appendix IV.

Appendix III. Course units in the first year of the degree programme

- List of course units (Art. 4.1.1 and 9.4.3)
- Compulsory order of examinations (Art. 9.3)

- The assessment method of the courses can be found in the assessment plan of the degree programme and on ocasys.rug.nl.
- The teaching method of the courses can be found on ocasys.rug.nl.
- There is no compulsory order of examinations.

Course unit name	Course code	ECTS
Calculus 1 (for IEM)	WBIE003-05	5
Global Supply Chain	WBIE005-05	5
Programming, Modelling and Simulation	WBIE008-05	5
Linear Algebra (for IEM)	WBIE009-05	5
Organizational Behaviour and Group Dynamics	WBIE012-05	5
System Dynamics	WBIE016-05	5
Calculus 2 (for IEM)	WBIE017-05	5
Management Accounting	WBIE022-05	5
Materials and Molecules	WBIE023-05	5
Physical Transport Phenomena	WBIE061-05	5
Industrial Marketing	WBIE050-05	5
Statistics and Stochastics	WBIE041-05	5

Approved substitute courses year 1

Course unit name	Course code	Substitute course	Course code
Calculus 1 (for IEM)	WBIE003-05	Calculus for Artificial Intelligence	WBAI048-05
		Calculus 1	WBCS055-05
		Calculus (for BME)	WBBE054-05
Linear Algebra (for IEM)	WBIE009-05	Linear Algebra (for LST)	WBLT015-05
		Linear Algebra and Multivariable Calculus	WBAI050-05
		Linear Algebra (for Physics)	WBPH054-05
Calculus 2 (for IEM)	WBIE017-05	Calculus 2	WBMA029-05
			UCG2RM01
			WBCS054-05

Students are only allowed to substitute courses from their regular degree programme from the table above with prior permission from the academic advisor and the Board of Examiners.

Appendix IV. Course units in the second and third years of the degree programme

- List of course units (Art. 7.1.1 and 9.4.3)
- Compulsory order of examinations (Art. 9.3)

- The assessment method of the courses can be found in the assessment plan of the degree programme and on ocasys.rug.nl.
- The teaching method of the courses can be found on ocasys.rug.nl.
- For information on the courses of other degree programmes see the teaching and examination regulations of the corresponding programme.
- There is no compulsory order of examinations.

Core IEM programme

Course unit name	Course code	ECTS
Operations Research	WBIE007-05	5
Outlining & Implementing Innovation Strategy	WBIE013-05	5
Design of Complex Systems	WBIE059-10	10
Dynamics of Engineering Systems	WBIE035-05	5
Production Planning and Quality Control	WBIE014-05	5
Specialisation specific courses	various	40
Minor space	various	30
Integration Project IEM*	WBIE901-20	20

* 140 ECTS of Bachelor IEM programme, including all first-year courses, and Research and Design Methodology or Design of Complex Systems, must have been completed to start the Bachelor Integration Project.

Production Technology and Logistics specialisation

Course unit name	Course code	ECTS
Mechanics (for IEM)	WBIE024-05	5
Modelling and Analysis of Complex Networks	WBIE025-05	5
Signals and Systems (for IEM)	WBIE030-05	5
Computer Aided Design and Manufacturing	WBIE033-05	5
Control Engineering	WBIE034-05	5
Production Techniques	WBIE040-05	5
Design and Construction for IEM	WBIE018-05	5
Mechanical Craftsmanship	WBIE057-05	5

Sustainable Process Engineering specialisation

Course unit name	Course code	ECTS
Industrial Biotechnology (for IEM)	WBIE051-05	5
Reactor Engineering	WBIE029-05	5
Technical Thermodynamics (IEM)	WBIE031-05	5
Gas-Liquid Mass Transfer	WBIE036-05	5
General Process Equipment	WBCE002-05	5
Applied Transport Phenomena for Sustainable Processes	WBIE058-05	5
Separation Processes	WBCE020-05	5
Product Technology (IEM)	WBIE028-05	5

Approved substitute courses years 2 and 3

Course unit name	Course code	Substitute course	Course code
Control Engineering	WBIE034-05	Control Engineering for BME*	WMBE024-05
Signals and Systems (for IEM)	WBIE030-05	Signals and Systems (for AI)	WBAI016-05
Technical Thermodynamics	WBIE031-05	Technical Thermodynamics	WBCE014-05

* The programme considers this course to be at the bachelor's level for IEM students.

Students are only allowed to substitute courses from their regular degree programme from the table above with prior permission from the academic advisor and the Board of Examiners.

Minor space
In the first semester of year 3, all students choose a minor package of 30 ECTS. Students can choose from several options to fill this space.

Option 1: IEM deepening courses
Students choose 30 ECTS out of the courses in this section.
Moreover, students may also take mandatory courses of the specialisation they are not following (see above) in their minor space (e.g. PTL students can take year 2 SPE courses to fill their minor space and vice versa).

Course unit name	Course code	ECTS	Field
Nanoscience and Nanotechnology	WBIE045-05	5	PTL
Electricity and Magnetism	WBBE032-05	5	PTL
Mechatronics	WBIE011-05	5	PTL / ME
Numerical Methods (for IEM)	WBIE049-05	5	PTL / ME
Dynamics and Vibrations	WBIE054-05	5	ME
Materials Science and Engineering	WBPH071-05	5	ME
Solid Mechanics (for IEM)	WBIE055-05	5	ME
Technical Thermodynamics*	WBCE014-05	5	SPE / ME
Biochemical Engineering	WBCE029-05	5	SPE
Industrial Organic Chemistry and Catalysis	WBCE003-05	5	SPE
Research Trends in Sustainable CE	WBCE031-05	5	SPE
Chemical Engineering Practical	WBCE033-05	5	SPE
Polymer Chemistry	WBCE037-05	5	SPE
Polymer Engineering	WBCE030-05	5	SPE
Special Process Equipment	WBCE012-05	5	SPE
Entrepreneurship for Engineers	WBIE047-05	5	Business
Introduction to Science Education	WBEC002-05	5	Education
Teach like a Scientist	WBEC004-05	5	Education

* Not possible for SPE students as they have an IEM equivalent course in their mandatory curriculum.

Students can also choose from the following courses offered by the Faculty of Economics and Business, but these courses have a separate sign-up procedure due to limited capacity.

Course unit name	Course code	ECTS	Field
Digital Transformation in IB	EBB632B05	5	Business
Teamwork – Theories, Design and Dynamics	EBB110A05	5	Business
Purchasing & Supply Chain Management	EBB742B05	5	Business

Health Economics	EBB120A05	5	Business
Junior Business Research and Consulting	EBB123A05	5	Business
Finance & Investment for IB	EBB631D05	5	Business
Macroeconomics for EOR	EBB027B05	5	Business
Linear Models in Statistics	EBB072A05	5	Business
Math VI: Convexity and Optimization	EBB151B05	5	Business
Microeconomics - Industrial Organization	EBB067A05	5	Business
Operations and Logistics Management	EBB068A05	5	Business
Stochastic Operations Research	EBB074B05	5	Business
Public Finance	EBB861A05	5	Business
Logistieke Informatiesystemen	EBB057A05	5	Business
Operations Management B&M/TM	EBB644B05	5	Business

Option 2: University minor
Any University minor. Information about the University minors is found on the following webpage: https://www.rug.nl/education/courses/minor/universitaire-en-persoonlijke-minorpakketten.

Option 3: Teacher Training minor
IEM students can take a teacher training minor which leads to a teaching qualification in Mathematics.

Option 4: Faculty of Economics and Business Minors
One of the minors offered by the Faculty of Economics and Business in the table below.

Minor Econometrics, Operations Research and Actuarial Studies This minor comprises of the 30ECTS of the premaster EORAS offered in semester 1. For the list of courses please see Ocasys for the appropriate academic year.
Minor Finance This minor can only be chosen without Mathematics for Pre-MSc and minors (EBB112B05) as this course overlaps too much with the IEM curriculum. A replacement courses must be chosen from the courses under option 1.
Minor Innovation & Entrepreneurship This minor can only be chosen without the course Innovation Management B&M (EBB107A05). A replacement course must be chosen from the courses under option 1. Entrepreneurship for Engineers (WBIE047-05) may not be chosen, as this course overlaps too much with the rest of the minor.

Option 5: personal minor package (including studying abroad)
Minors not on the approved list are subject to approval by the Board of Examiners. The Board of Examiners decides if the proposed minor package is a valuable addition to the bachelor degree programme Industrial Engineering and Management. The student needs to provide sufficient information on the courses they wish to take in order for the Board of Examiners to determine this.

The proposed minor package should not have overlap with the curriculum of the bachelor degree programme Industrial Engineering and Management. The student should provide a short motivation on why the personal minor package is a valuable addition to their BSc programme. A personal minor may include up to 10 ECTS in language proficiency courses.

Additionally, the Mobility and Internship Center also needs to give approval for a personal minor outside of the University of Groningen.

Appendix V. Contact hours (Art. 3.6.1)

Degree programme year 1	
Structure contact hours	**Contact hours per year**
Lectures	310
Tutorial	180
Tutoring	12
Supervision during an internship	N.A.
Examinations	210
Practicals	50

Appendix VI. Additional requirements open degree programmes (Art. 7.3)

In exceptional circumstances, students wishing to pursue an open degree programme may file a request with the Board of Examiners. The Board of Examiners will evaluate whether the proposed curriculum meets the learning outcomes of the degree programme and can determine further conditions in their rules and regulations.

Appendix VII. Transitional provisions (Art. 12.1)

Discontinued course units				**Substitute course units**			
Course unit code	*Course unit name*	*ECTS*	*Final exam period*	*Course unit code*	*Course unit name*	*ECTS*	*Explanation*
WBIE042-05	Transport Phenomena 2	5	2022-2023	WBIE058-05	Applied Transport Phenomena for Sustainable Processes	5	Name change of the course. The content is largely unaltered.
WBIE019-05	Design Science	5	2024-2025	WBIE901-20	Bachelor Integration project	20	The contents of Design Science are now part of the integration project. Students who have not passed Design Science and/or their Integration project can take the new 20 ECTS bachelor project.
WBIE901-15	Bachelor Integration project (SPE)	15	2024-2025				
WBIE902-15	Bachelor Integration project (PTL)	15	2024-2025				
WBCE020-05	Capita Selecta SPE	5	2025-2026	WBCE020-05	Separation Processes	5	Curriculum change. The subject of the courses is not equivalent, the new course is deemed more suitable in the standard curriculum. A final exam opportunity is organized in 2026-2027 for students who need to retake the course from 25-26.
WBIE039-05	Process Design and Equipment	5	2025-2026	WBCE002-05	General Process Equipment	5	The courses were already running together in 2025-2026. Therefore, it has been decided to merge the two into one course.