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 (2025-2026)

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Appendix I Learning outcomes of the Bachelor's degree programme (Article 3.1)

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 (Article 3.7 and 7.1.3)

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

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 (Article 4.1.1 and 9.3)

- List of course units (Article 4.1.1)
- Compulsory order of examinations (Article 9.3)

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

- 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.

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

- List of course units (Article 7.1.1)
- Compulsory order of examinations (Article 9.3)

Production Technology and Logistics Track

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
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
Bachelor Integration Project**	WBIE901-20	20
Design and Construction for IEM	WBIE018-05	5
Mechanical Craftsmanship	WBIE057-05	5

Sustainable Process Engineering track

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
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
Process Design and Equipment	WBIE039-05	5
Applied Transport Phenomena for Sustainable Processes	WBIE058-05	5
Bachelor Integration Project**	WBIE901-20	20
Capita Selecta SPE	WBIE046-05	5
Product Technology (IEM)	WBIE028-05	5

* This course may be substituted by Control Engineering for BME (WMBE024-05). The programme considers this course to be at the bachelor's level for IEM students. However, due to capacity reasons in the course prior permission must be granted by the academic advisor to take this course instead.
** 140 ECTS of Bachelor IEM programme, including Research and Design Methodology or Design of Complex Systems, must have been completed to start the Bachelor Integration Project.

- 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.

Minor space
In the first semester of year 3, all students choose a minor package of 30 ECTS.

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 track they are not following for their minor.

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 **or** WBIE031-05	5	SPE / ME
Chemical Process Development and Design	WBCE007-05	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

* Students from the SPE track cannot choose this course as an elective, as they have a technical thermodynamics course in their mandatory courses. A PTL student may also take Technical Thermodynamics (IEM) (WBIE031-05) as an elective.

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
Fundamentals of Finance for IB	EBB631C05	5	Business
Macroeconomics for EOR	EBB027B05	5	Business

- For information on the courses of other degree programmes see the teaching and examination regulations of the corresponding programme.
- 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.

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 the course Management Accounting for BE (EBB846C05). A replacement course must be chosen from one of the other options in option group E in Ocasys within the minor Finance or the IEM deepening 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 IEM deepening 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.

- For information on the courses of other degree programmes see the teaching and examination regulations of the corresponding programme.
- 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.

Option 5: studying abroad
Approval from the Board of Examiners and the Mobility and Internship Center of the Faculty of Science and Engineering is required to follow a minor abroad.

In addition, the Board of Examiners reviews if the proposed minor package:
1. Has no overlap with the curriculum of the bachelor degree programme Industrial Engineering and Management.
2. Contains no first-year courses not on the sufficient level.
3. Has enough information provided about the proposed minor package to evaluate the proposal.

Optional module package 6: personal minor package
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.

In addition, the Board of Examiners reviews if the proposed minor package:
1. Has no overlap with the curriculum of the bachelor degree programme Industrial Engineering and Management.
2. Contains no first year courses not on the sufficient level.
3. Contains a coherent set of course units.
4. Has enough information provided about the proposed minor package to evaluate the proposal.

Appendix V Contact hours of the first year of the degree programme (Article 3.6)

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 (Article 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 (Article 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*	*Equivalent?*
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.	No
WBIE901-15	Bachelor Integration project (SPE)	15	2024-2025					
WBIE902-15	Bachelor Integration project (PTL)	15	2024-2025					