

**Study and examination regulations for  
the Bachelor's study programme  
(Bachelor of Engineering, B. Eng.)  
Industrial Engineering/ Maintenance and Operation  
at the Technische Hochschule Deggendorf  
of 01.10.2018**

In accordance with Art. 13 Para. 2 Clause 2, 58 Para. 1, 61 Para. 2 Clause 1 of the Bavarian Higher Education Act (BayHSchG) of 23 May 2006 (BayRS 2210-1-1-WFK), amended on multiple occasions (Para. 1 No. 212 V of 22.7.2014, 286), the Technische Hochschule Deggendorf has enacted the following statutes:

**Section 1  
Study objective**

- (1) Study in the Industrial Engineering Bachelor's study programme, majoring in "Maintenance and Operation" (MO), has the objective of teaching a broad interdisciplinary qualification in knowledge-intensive engineering and business administration based on scientific insights and methods and is practically orientated. A further objective of the programme of study is to impart specialist, methodical and social competence which enables students to independently apply scientific insights and procedures and to act responsibly both professionally and socially as an employee and as a contractor. Students also acquire social and international competencies which enable confident acting and competent dealing in the complex and intercultural environment of the economy, especially in the field of energy and resource management. Because of the increasing internationalisation of the economy, international aspects, extension of language competency and a period spent abroad of at least one semester have a high value.
- (2) Students will be enabled to grasp overarching correlations, to react flexibly and to manage people by means of a generalist education, majoring in specialist engineering fields, supplemented with business management content, legal bases and key qualifications in the entrepreneurial field, in addition to the acquisition of generalist knowledge. Graduates will be enabled to grasp the rapid transformation of technical advances, to jointly develop possible technical designs and solutions and to evaluate their technical expediency, to assess technical concepts from an economic perspective and to use these for the company applying business management principles and to recognise the impact of decisions on company operations, employees and the environment and to act responsibly according to these.

- (3) The study programme is a qualification for generalist activities in the following work sectors:
- Business sector and product planning, Business Development
  - Project planning of facilities, project management and project controlling
  - Innovative and technological management
  - Technical planning and controlling
  - Technical procurement, organisation and logistics
  - Industrial goods marketing
  - Commercial engineering
  - Service and maintenance engineering
  - Maintenance management
  - Controlling for technical specialist sectors
  - International language competency
  - Assistant to company management, profit center responsibility
  - Business sector management and company management
  - Company start-up and company succession.
- (4) Store is set by a multifaceted, qualified and cross-curricular education which enables graduates to be able to seize diverse professional opportunities. An implementation-orientated degree, taking into account the requirements of small and medium-sized companies is the focus of the training. The graduates will be prepared for subsequent managerial functions in companies and for possible autonomy or company succession.

## **Section 2 Pre-requisites for admission**

For the Industrial Engineering Bachelor's study programme the general admission requirements must be fulfilled for study at a university in accordance with Art. 43, 45 BayHSchG in conjunction with the Ordinance regarding Qualification for a Study Programme at Universities in the Free State of Bavaria and the non-state universities recognised by the state (Qualification Ordinance QualV) (BayRS 2210-1-1-3-UK/WFK) in the respectively applicable version.

## **Section 3 Standard study period, study programme composition, majors**

1. The study programme encompasses a standard study period of seven semesters of study with six theoretical semesters of study and one practical semester of study. The practical semester of study shall take place in the sixth semester of study.
2. Classes and examinations shall be undertaken in the German and English language in the first and second semester. Language courses shall take place in the English and German language in the first four semesters. Further languages are offered in the second and fourth semester. Examinations shall take place in the German and English languages in the first and second semester. Examinations shall take place in the English

language from the third semester onwards. The dissertation can be written in the German or English language.

3. The Industrial Engineering Bachelor's study programme is sub-divided into the two Engineer and Manager majors from the 3rd semester onwards. The students must decide which major they wish to select at the end of the 2nd semester at the latest.
4. Students can select different modules according to their choice of major from the third semester onwards (matrix organisation).
5. 40 ECTS credit points must be acquired in each major between the third and seventh semester. Hereof, 15 ECTS credit points are specified as a compulsory subject in the major. The remaining 25 ECTS credit points are specialist elective compulsory modules (SEC) and can be selected by the students themselves.
6. In addition, regardless of the major, 20 ECTS credit points must be acquired in the field of Sustainability and Data Processing (common electives) from the third semester onwards. Hereof, 5 ECTS credit points are specified as a compulsory subject for both majors. The remaining 15 ECTS credit points are specialist elective compulsory modules (SEC) and can be selected by the students themselves (Common electives).
7. 15 ECTS credit points must be acquired from every non-major from the third semester onwards. Hereof, 5 ECTS credit points are specified as a compulsory subject. The remaining 10 ECTS credit points are specialist elective compulsory modules (SEC) and can be selected by the students themselves.

#### **Section 4 Proof of language knowledge**

The programme of study is delivered in the English language. English language knowledge to language level B2 of the Common European Reference Framework for languages of the Council of Europe must therefore be proven.

The following certificates are accepted as proof of language knowledge:

- TOEFL: Test of English as a Foreign Language  
Level: internet based test 72-94 points
- TOEIC: Test of English for International Communication  
Level: listening 400-485 points, reading 450 points
- IELTS: International English Testing System  
Level: IELTS Academic min. 5.5-6.5 points
- TELC English  
Level: B2 School, Business or Technical
- ESOL Cambridge University: English for Speakers of Other Languages  
Level:

- Cambridge English: First (FCE),
- Certificate in English Language Skills: Vantage
- Cambridge English: Business Vantage
- CET: College English Test  
Level: Volume 6
- Pearson PTE Academic: min. 59 points

Proof is provided by submitting the respective certificate or by submitting the mark sheet or other proofs (e.g. entitlement to university admission in the relevant language) which are equivalent to those already stated. The examinations committee of the language centre will decide on the equivalence of other proofs. The certificate must not be older than three years old.

All applicants for the course of study who have not obtained their qualification for the course of study from a German-speaking institution need to prove adequate German language knowledge for acceptance onto the study programme. Proof must be provided by submitting a certificate or a comparable confirmation which is language level B2 (or higher) of the Common European Reference Framework for languages of the Council of Europe. The examinations committee of the university language centre will decide on the equivalence. Where proof has not been able to be provided at the start of the study programme, enrolment shall take place in this regard under the resolutive condition that proof is provided by the end of the fourth semester of study at the latest.

The following certificates are accepted as proof of language knowledge:

- TestDaF: Test German as a Foreign  
Language level: At least 15 points
- DSH: German Language Examination for University  
Admission level: DSH 2
- telc: The European Language Certificates  
level: B2
- Goethe  
certificate level:  
B2

Proof is provided by submitting the respective certificate or by submitting the mark sheet or other proofs (e.g. entitlement to university admission in the relevant language) which are equivalent to those already stated. The examinations committee of the language centre will decide on the equivalence of other proofs.

## **Section 5 Modules**

- (1) The study programme consists of modules which can comprise teaching sessions with specialist correlations. ECTS credit points which take into account the necessary time requirements for the students are assigned to every module.

- (2) The compulsory and elective compulsory modules, the teaching form, the number of hours, the examinations and the ECTS points are laid down in the appendix to these statutes. The regulations are supplemented with the curriculum for the general and specialist elective compulsory modules.
- (3) All modules consist of compulsory subjects or elective compulsory subjects:
  1. Compulsory modules are binding for all students.
  2. Elective compulsory modules are the modules which are offered individually or alternatively in groups. Students must make a certain selection from these in accordance with these study and examination regulations. The selected modules are treated as compulsory modules.
  3. Elective modules are modules which are not prescribed as binding for attainment of the study objective. Students can additionally select these from the range of courses offered by the university
- (4) Modules can also be taught in blocks.
- (5) No claim exists to insisting that all envisaged elective compulsory modules and elective modules are actually offered. Likewise, no claim exists to insisting that the pertaining teaching sessions take place if there is an insufficient number of participants.

## **Section 6 Curriculum**

The faculty responsible creates a curriculum to ensure the range of courses on offer and for information purposes of the students from which the specific sequence of the study programme results. The curriculum is decided on by the faculty council and must be published within the university before the start of the semester. Notifications of changes or new regulations must be made at the latest at the start of the lecture period of the semester in which these changes are to be applied for the first time. The curriculum in particular contains regulations and information on

1. the time allocation for hours per week of the semester for each module and semester of study, including ECTS points,
2. the name and majors offered in the study programme and their compulsory and elective compulsory modules and the number of hours, the type of teaching session, study programme objectives and study programme content of these modules,
3. the specialist elective compulsory modules with their number of hours,
4. the teaching method in the individual modules, insofar as they have not been finally determined in the appendix,
5. the study objectives and content of the individual modules (module handbook),
6. the objectives and content of practical and practically orientated teaching sessions in the practical semester of the study programme and their form and organisation.

## **Section 7 Specialist study guidance**

It is suggested that students who have not yet attained 40 ECTS credit points after two semesters of specialist study consult the specialist study programme guidance office.

## **Section 8 Basic and orientation examination**

Students must have sat the examinations of the following modules for the first time by the end of the second semester

- EB-01 Principles of Mathematics
- EB-03 Informatics for Engineering
- EB-04 Technical Mechanics
- EB-05 Principles in Business
- EB-08 Principles in Natural Sciences

## **Section 9 Practical semester of study**

- (1) The sixth semester of the study programme is intended to be a practical semester of study. It encompasses at least 20 weeks and includes an internship in a company and accompanying teaching sessions, as can be seen from Appendix 1.  
Proof of practical activity can be replaced with subject-related practical training in especially justified exceptional cases. The internship officer of the faculty shall make the decision in this regard.
- (2) The regulations of the practical semester ordinance shall also apply.
- (3) If the training objective is not adversely affected, making up for interruptions to practical attendance is exceptionally not required if the students are not liable (e.g. company holidays, illness) and the days of absence caused by the interruption do not exceed five working days in total. When fulfilling a defence exercise, making up for interruptions is not required if its duration is no longer than 10 working days. Students must prove that they are not liable for the interruption. If the interruptions extend over more than 5 or 10 working days, the days of absence must therefore be made up overall. Overtime accomplished can be credited to interruptions.
- (4) The pre-requisite for entry to the practical semester of study is that at least 90 ECTS credit points have been attained.

## **Section 10**

### **Evaluation of examination performances**

- (1) An examination is assigned to each module. If a module examination consists of several examination performances, the module grade is calculated from an arithmetical average of grades of the individual examination performances rounded to one decimal place. The individual examination performances are weighted according to the ECTS credit points assigned. For the specified ECTS credit points cf. Appendix – overview of the modules. ECT credit points are only acquired on successful completion of the modules.  
ECTS points for each teaching session are specified to calculate the module grade.
- (2) If a module examination consists of several examination performances, the grade "inadequate" in a partial examination cannot be offset by a better grade in a different partial examination.
- (3) The overall examination grade is calculated by forming the weighted arithmetical average of the individual grades. The weight of an individual grade is equivalent to the number of ECTS credit points assigned to the subject for which the grade was awarded.
- (4) In addition to the overall examination grade according to Para. 3 on the basis of the number value attained, a relative grade is shown according to the ECTS user guide according to the regulations in Section 8 Para. 6 of the General Examinations Regulation of the Hochschule Deggendorf.

## **Section 11**

### **Bachelor's dissertation**

- (1) In the Bachelor's dissertation students should prove their ability to independently apply the knowledge and skills acquired during the study programme to complex tasks.
- (2) Students who have attained 120 ECTS credit points can enrol for the Bachelor's dissertation.
- (3) The Bachelor's dissertation can be written in the English or German language. Topics are issued by professors in the faculty.
- (4) The writing time for the Bachelor's dissertation is 6 months.

## **Section 12**

### **Report**

A report is issued in relation to the successfully completed Bachelor's degree examination according to the respective sample in the appendix to the General Examination Regulations of the Technische Hochschule Deggendorf.

**Section 13**  
**Academic degree and Diploma Supplement**

- (1) Following successful completion of the Bachelor's examination, the academic degree of "Bachelor of Engineering" (abbreviated to "B.Eng.") is awarded.
- (2) A certificate is issued in association with the awarding of the academic degree according to the respective sample in the appendix to the General Examination Regulations of the Technische Hochschule Deggendorf.
- (3) The certificate is drafted in two languages. A diploma supplement is also enclosed which describes in particular the fundamental content of the study programme on which the qualification is based, the study programme and the qualification which the academic degree confers.

**Section 14**  
**Entry into force**

These study and examination regulations enter into force on 01 October 2018. They apply to all students commencing their study programme in the winter semester 2018/2019.



# Appendix 1 a

## to the study and examination regulations for the "Industrial Engineering / Maintenance and Operation" Bachelor's study programme – Major Engineering

Bachelor Industrial Engineering / Maintenance and Operation - Major Engineering															
Principle Courses															
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)		Teaching form	Type of examination and duration	Type of module
Module-Nr.	Course-Nr.	Module / Course		Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-01		Principles of Mathematics		4								5			
	EB1101	Analytical Principles of Engineering			4							5	SU/Ü	schrP 90 min.	mandatory
EB-02		Principles in Mathematics for Engineering		4								5			
	EB2101	Mathematics for Engineering				4						5	SU/Ü	schrP 90 min.	mandatory
EB-03		Informatics for Engineering		8								8			
	EB1102	Informatics 1			2							2	SU/Ü		
	EB1103	Informatics exercises			2							2	Pr	schrP 90 min.	mandatory
	EB2102	Informatics 2				4						4	SU/Ü		
EB-04		Technical Mechanics		4								5			
	EB1104	Technical Mechanics (statics, material strength)				4						5	SU/Ü	schrP 90 min.	mandatory
EB-05		Principles in Business		8								10			
	EB1105	Fundamentals in Business Administration and Economics			4							5	SU/Ü		
	EB1106	Accounting			4							5	SU/Ü	schrP 120 min.	mandatory
EB-06		Marketing		4								5			
	EB1107	Marketing			4							5	SU/Ü	schrP 120 min.	mandatory
EB-07		Business law		6								6			
	EB2103	Private law				4						4	SU/Ü		
	EB2104	Taxes				2						2	SU/Ü	schrP 90 min.	mandatory
EB-08		Principles in Natural Sciences including lab work		10								10			
	EB2105	Physics			4							4	SU/Ü/Pr	schrP 90 min.	
	EB2106	Chemistry			4							4	SU/Ü/Pr	schrP 90 min.	mandatory
	EB2107	Biology				2						2	SU/Ü/Pr	schrP 60 min.	
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)		Teaching form	Type of examination and duration	Type of module
Module-Nr.	Course-Nr.	Module / Course		Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-09		English		4								4			
	EB2108	Technical English 1				2						2	SU/Ü	schrP 60 min.	mandatory
	EB3102	Technical English 2					2					2	SU/Ü	schrP 60 min.	mandatory
EB-10		Foreign Language I – IV <sup>1</sup>		12								12			
	EB1110	Foreign Language I			4							4	SU/Ü	schrP 90 min.	mandatory
	EB2112	Foreign Language II				2						2	SU/Ü	schrP 60 min.	mandatory
	EB3119	Foreign Language III					4					4	SU/Ü	schrP 90 min.	mandatory
	EB4119	Foreign Language IV						2				2	SU/Ü	schrP 60 min.	mandatory
EB-11		Intercultural competences		8								10			
	EB5103	Intercultural Basic Module 1						4				5	SU/Ü		
	EB5104	Intercultural Module 2							4			5	SU/Ü	schrP 120 min.	mandatory
Mandatory courses for Major Engineering															
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)		Teaching form	Type of examination and duration	Type of module
Module-Nr.	Course-Nr.	Module / Course		Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-15		Plant Technology		4								5			
	EB3104	Energy Plant Engineering					2					3	SU/Ü		
	EB3105	Production System Engineering					2					2	SU/Ü	schrP 90 min.	mandatory
EB-25		Renewable Energies		4								5			
	EB3113	Fundamentals of Renewable Energies					2					3	SU/Ü		
	EB4108	Renewable Energy Systems						2				2	SU/Ü	schrP 90 min.	mandatory
EB-36		Logistics		4								5			
	EB4115	Logistics						2				3	SU/Ü		
	EB4116	Operations Research, especially Workforce Planning						2				2	SU/Ü	schrP 90 min.	mandatory
EB-27		Measurement and Control Engineering		8								10			
	EB4109	Fundamentals of Measurement and Control Engineering						4				4	SU/Ü	schrP 90 min.	
	EB5112	Applied Measurement Engineering with exercises							2			3	SU/Ü/Pr	Report	mandatory
	EB5113	Applied Control Engineering with exercises							2			3	SU/Ü/Pr	Report	
EB-12		Project work with report		6								7			
	EB5105	Project work with report							6			7	PA	Project (report)	mandatory
EB-40		AWP – Compulsory elective subject		4								4			
	EB2113	AWP I				2						2	SU/Ü	schrP 60 min.	mandatory
	EB4120	AWP II					2					2	SU/Ü	schrP 60 min.	mandatory
EB-42		Internship including PLV-seminars		30								30			
	EB6101	Internship including PLV-seminars								30		30	Pr	Internship	mandatory
EB-13		Bachelor thesis		14								14			
	EB2109	Methods in scientific work and academic writing				2						2	SU/Ü/Pr	Report	mandatory
	EB7101	Bachelor thesis (incl. final presentation)									12	12	BA	Bachelor thesis	mandatory

Common electives: choose 15 ECTS														
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)			
Module-Nr.	Course-Nr.	Module / Course	Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-39		<b>Insights into the Corporate World</b>	4								5			
	EB1109	Insights into the Corporate World 1		2							3	SU/Ü		
	EB2110	Insights into the Corporate World 2			2						2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-14		<b>Sustainability</b>	8								10			
	EB4102	Environment and Climate					2				3	SU/Ü	Report/Presentation	
	EB4103	Certification Systems (LCA)					2				3	SU/Ü	schrP 60 min.	FWP+ <sup>1</sup>
	EB4104	Energy and Resource Efficiency					4				4	SU/Ü	schrP 90 min.	
EB-16		<b>Quality Management</b>	4								5			
	EB5106	Principles of Quality Management						2			3	SU/Ü		
	EB5107	Quality Methods (Six Sigma)						2			2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-17		<b>Human Resource Management and Labour Law</b>	4								5			
	EB4105	Human Resource Management					2				2	SU/Ü	Report/Presentation	FWP+ <sup>1</sup>
	EB4106	Labour Law and HR Processes					2				3	SU/Ü	schrP 60 min.	
EB-18		<b>Statistics</b>	4								5			
	EB3106	Statistics					4				5	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-19		<b>IT in the Plant Technology</b>	4								5			
	EB5108	Data Communication and Processing / Industry 4.0						2			3	SU/Ü		
	EB5109	Human-Machine Interaction						2			2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-20		<b>Data Processing, Geoinformation Systems</b>	4								5			
	EB3107	Data and Signal Acquisition and Processing					2				3	SU/Ü/Pr		
	EB3108	Geoinformation Systems					2				2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-21		<b>Energy Markets and Economic Geography</b>	4								5			
	EB7103	Energy Markets								2	3	SU/Ü		
	EB7104	Economic Geography								2	2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>

Engineering electives: choose 25 ECTS														
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)			
Module-Nr.	Course-Nr.	Module / Course	Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-22		<b>Electrical Engineering</b>	4								5			
	EB3109	Fundamentals of Electrical Engineering					4				5	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-23		<b>Process Engineering</b>	4								5			
	EB3110	Mechanical and Thermal Process Engineering					2				3	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
	EB4107	Chemical and Biological Process Engineering					2				2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-24		<b>Design Engineering and Material Science</b>	4								5			
	EB3111	Design Engineering					2				2	SU/Ü		
	EB3112	Material Science					2				3	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-26		<b>Energy Technology</b>	4								5			
	EB5110	Fluid and Energy Technology						2			2	SU/Ü/Pr		
	EB5111	Conventional Energy Technology						2			3	SU/Ü/Pr	schrP 90 min.	FWP+ <sup>1</sup>
EB-28		<b>Lab work</b>	4								5			
	EB3114	Lab work in Chemistry/Biology					2				3	SU/Ü/Pr	Practical work (report)	FWP+ <sup>1</sup>
	EB4110	Lab work in Physics					2				2	SU/Ü/Pr	Practical work (report)	FWP+ <sup>1</sup>
EB-29		<b>Process Reliability and Work Safety</b>	4								5			
	EB4111	Process Reliability					2				3	SU/Ü/Pr		
	EB4112	Work Safety					2				2	SU/Ü/Pr	schrP 90 min.	FWP+ <sup>1</sup>
EB-30		<b>Process Optimisation</b>	4								5			
	EB7105	LEAN-Management (Value Stream Mapping) and FMEA								2	3	SU/Ü		
	EB7106	Process Optimisation in Control and Systems Engineering								2	2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>

Management electives: choose 10 ECTS														
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)			
Module-Nr.	Course-Nr.	Module / Course	Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-31		<b>Capital Budgeting and Financing</b>	8								10			
	EB3115	Financing					4				5	SU/Ü		
	EB3116	Capital Budgeting and Technical Controlling					4				5	SU/Ü	schrP 120 min.	FWP+ <sup>1</sup>
EB-32		<b>Management</b>	4								5			
	EB5114	Project Management						2			2	SU/Ü		
	EB5115	Innovation Management						2			3	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-33		<b>Maintenance, Repair and Operation Strategies and Planning</b>	4								5			
	EB4113	Maintenance, Repair and Operation Strategies					2				3	SU/Ü		
	EB4114	Strategic Planning					2				2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-34		<b>Globalisation</b>	4								5			
	EB7107	Regional and Global Economic Regions								2	3	SU/Ü		
	EB7108	International Integration								2	2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-35		<b>Business Planning and Start-up Management</b>	4								5			
	EB7109	Business Planning								2	3	SU/Ü		
	EB7110	Start-up Management								2	2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-37		<b>Operational Processes</b>	4								5			
	EB4117	Operational Organisation					2				2	SU/Ü		
	EB4118	Enterprise Information Systems					2				3	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>
EB-38		<b>Cost Accounting and Budgeting</b>	4								5			
	EB3117	Cost Accounting					2				3	SU/Ü		
	EB3118	Budgeting					2				2	SU/Ü	schrP 90 min.	FWP+ <sup>1</sup>

1. Sem. 2. Sem. 3. Sem. 4. Sem. 5. Sem. 6. Sem. 7. Sem. Internship Bachelor thesis

\*The modules "Foreign Language I - IV" are ascending language courses in a foreign language defined in the curriculum. Students without a standardised proof of the german B2 Level have to absolve german courses until they reach the required B2 Level.

Abbreviations	
BA	Bachelor thesis
ECTS	European Credit Transfer System
mdIP	Oral examination
schrP	written examination
Pr	Internship, project work
PA	Project work with report
SU	Course teaching/exercises/tutorials
SWS	Semester periods per week
Ü	Exercise
FWP+ <sup>1</sup>	Electives (depends on course offer) - a semester abroad is possible.
AWP	General Mandatory Elective

# Appendix 1 b to the study and examination regulations for the "Industrial Engineering / Maintenance and Operation" Bachelor's study programme – Major Management

Bachelor Industrial Engineering / Maintenance and Operation - Major Management														
Principle Courses														
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)			
Module-Nr.	Course-Nr.	Module / Course	Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-01		Principles of Mathematics	4								5			
	EB1101	Analytical Principles of Engineering		4							5	SU/Ü	schrP 90 min.	mandatory
EB-02		Principles in Mathematics for Engineering	4								5			
	EB2101	Mathematics for Engineering			4						5	SU/Ü	schrP 90 min.	mandatory
EB-03		Informatics for Engineering	8								8			
	EB1102	Informatics 1		2							2	SU/Ü		
	EB1103	Informatics exercises		2							2	Pr	schrP 90 min.	mandatory
	EB2102	Informatics 2			4						4	SU/Ü		
EB-04		Technical Mechanics	4								5			
	EB1104	Technical Mechanics (statics, material strength)			4						5	SU/Ü	schrP 90 min.	mandatory
EB-05		Principles in Business	8								10			
	EB1105	Fundamentals in Business Administration and Economics		4							5	SU/Ü	schrP 120 min.	mandatory
	EB1106	Accounting		4							5	SU/Ü		
EB-06		Marketing	4								5			
	EB1107	Marketing		4							5	SU/Ü	schrP 120 min.	mandatory
EB-07		Business law	6								6			
	EB2103	Private law			4						4	SU/Ü	schrP 90 min.	mandatory
	EB2104	Taxes			2						2	SU/Ü		
EB-08		Principles in Natural Sciences including lab work	10								10			
	EB2105	Physics		4							4	SU/Ü/Pr	schrP 90 min.	mandatory
	EB2106	Chemistry		4							4	SU/Ü/Pr	schrP 90 min.	mandatory
	EB2107	Biology			2						2	SU/Ü/Pr	schrP 60 min.	mandatory
Mandatory courses for Major Management														
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)			
Module-Nr.	Course-Nr.	Module / Course	Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-09		English	4								4			
	EB2108	Technical English 1			2						2	SU/Ü	schrP 60 min.	mandatory
	EB3102	Technical English 2				2					2	SU/Ü	schrP 60 min.	mandatory
EB-10		Foreign Language I - IV*	12								12			
	EB1110	Foreign Language I		4							4	SU/Ü	schrP 90 min.	mandatory
	EB2112	Foreign Language II			2						2	SU/Ü	schrP 60 min.	mandatory
	EB3119	Foreign Language III				4					4	SU/Ü	schrP 90 min.	mandatory
	EB4119	Foreign Language IV					2				2	SU/Ü	schrP 60 min.	mandatory
EB-11		Intercultural competences	8								10			
	EB5103	Intercultural Basic Module 1						4			5	SU/Ü		
	EB5104	Intercultural Module 2						4			5	SU/Ü	schrP 120 min.	mandatory
EB-31		Capital Budgeting and Financing	8								10			
	EB3115	Financing				4					5	SU/Ü		
	EB3116	Capital Budgeting and Technical Controlling				4					5	SU/Ü	schrP 120 min.	mandatory
EB-15		Plant Technology	4								5			
	EB3104	Energy Plant Engineering				2					3	SU/Ü		
	EB3105	Production System Engineering				2					2	SU/Ü	schrP 90 min.	mandatory
EB-25		Renewable Energies	4								5			
	EB3113	Fundamentals of Renewable Energies				2					3	SU/Ü		
	EB4108	Renewable Energy Systems					2				2	SU/Ü	schrP 90 min.	mandatory
EB-26		Logistics	4								5			
	EB4115	Logistics					2				3	SU/Ü		
	EB4116	Operations Research, especially Workforce Planning					2				2	SU/Ü	schrP 90 min.	mandatory
EB-12		Project work with report	6								7			
	EB5105	Project work with report						6			7	PA	Project (report)	mandatory
EB-40		AWP - Compulsory elective subject	4								4			
	EB2113	AWP I			2						2	SU/Ü	schrP 60 min.	mandatory
	EB4120	AWP II				2					2	SU/Ü	schrP 60 min.	mandatory
EB-42		Internship including PLV-seminars	30								30			
	EB6101	Internship including PLV-seminars						30			30	Pr	Internship	mandatory
EB-13		Bachelor thesis	14								14			
	EB2109	Methods in scientific work and academic writing			2						2	SU/Ü/Pr	Report	mandatory
	EB7101	Bachelor thesis (incl. final presentation)								12	12	BA	Bachelor thesis	mandatory

Common electives: choose 15 ECTS														
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)			
Module-Nr.	Course-Nr.	Module / Course	Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-39		Insights into the Corporate World	4								5			
	EB1109	Insights into the Corporate World 1		2							3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB2110	Insights into the Corporate World 2			2						2	SU/Ü		
EB-14		Sustainability	8								10			
	EB4102	Environment and Climate					2				3	SU/Ü	Report/Presentation	FWP* <sup>1</sup>
	EB4103	Certification Systems (LCA)					2				3	SU/Ü	schrP 60 min.	
	EB4104	Energy and Resource Efficiency					4				4	SU/Ü	schrP 90 min.	
EB-16		Quality Management	4								5			
	EB5106	Principles of Quality Management						2			3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB5107	Quality Methods (Six Sigma)						2			2	SU/Ü		
EB-17		Human Resource Management and Labour Law	4								5			
	EB4105	Human Resource Management					2				2	SU/Ü	Report/Presentation	FWP* <sup>1</sup>
	EB4106	Labour Law and HR Processes					2				3	SU/Ü	schrP 60 min.	
EB-18		Statistics	4								5			
	EB3106	Statistics					4				5	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
EB-19		IT in the Plant Technology	4								5			
	EB5108	Data Communication and Processing / Industry 4.0						2			3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB5109	Human-Machine Interaction						2			2	SU/Ü		
EB-20		Data Processing, Geoinformation Systems	4								5			
	EB3107	Data and Signal Acquisition and Processing					2				3	SU/Ü/Pr	schrP 90 min.	FWP* <sup>1</sup>
	EB3108	Geoinformation Systems					2				2	SU/Ü		
EB-21		Energy Markets and Economic Geography	4								5			
	EB7103	Energy Markets								2	3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB7104	Economic Geography								2	2	SU/Ü		

Management electives: choose 25 ECTS														
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)			
Module-Nr.	Course-Nr.	Module / Course	Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-32		Management	4								5			
	EB5114	Project Management						2			2	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB5115	Innovation Management						2			3	SU/Ü		
EB-33		Maintenance, Repair and Operation Strategies and Planning	4								5			
	EB4113	Maintenance, Repair and Operation Strategies					2				3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB4114	Strategic Planning					2				2	SU/Ü		
EB-34		Globalisation	4								5			
	EB7107	Regional and Global Economic Regions								2	3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB7108	International Integration								2	2	SU/Ü		
EB-35		Business Planning and Start-up Management	4								5			
	EB7109	Business Planning								2	3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB7110	Start-up Management								2	2	SU/Ü		
EB-37		Operational Processes	4								5			
	EB4117	Operational Organisation					2				2	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB4118	Enterprise Information Systems					2				3	SU/Ü		
EB-38		Cost Accounting and Budgeting	4								5			
	EB3117	Cost Accounting					2				3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB3118	Budgeting					2				2	SU/Ü		

Engineering electives: choose 10 ECTS														
Overview over module and course numbers, module and courses (SWS and ECTS)				Semester periods per week (SWS)							European Credit Transfer System (ECTS)			
Module-Nr.	Course-Nr.	Module / Course	Module	1. Sem.	2. Sem.	3. Sem.	4. Sem.	5. Sem.	6. Sem.	7. Sem.	Module	Teaching form	Type of examination and duration	Type of module
EB-22		Electrical Engineering	4								5			
	EB3109	Fundamentals of Electrical Engineering					4				5	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
EB-23		Process Engineering	4								5			
	EB3110	Mechanical and Thermal Process Engineering					2				3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB4107	Chemical and Biological Process Engineering					2				2	SU/Ü		
EB-24		Design Engineering and Material Science	4								5			
	EB3111	Design Engineering					2				2	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB3112	Material Science					2				3	SU/Ü		
EB-26		Energy Technology	4								5			
	EB5110	Fluid and Energy Technology						2			2	SU/Ü/Pr	schrP 90 min.	FWP* <sup>1</sup>
	EB5111	Conventional Energy Technology						2			3	SU/Ü/Pr		
EB-27		Measurement and Control Engineering	8								10			
	EB4109	Fundamentals of Measurement and Control Engineering					4				4	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB5112	Applied Measurement Engineering with exercises						2			3	SU/Ü/Pr		
	EB5113	Applied Control Engineering with exercises						2			3	SU/Ü/Pr	Report	
EB-28		Lab work	4								5			
	EB3114	Lab work in Chemistry/Biology					2				3	SU/Ü/Pr	Practical work (report)	FWP* <sup>1</sup>
	EB4110	Lab work in Physics					2				2	SU/Ü/Pr	Practical work (report)	FWP* <sup>1</sup>
EB-29		Process Reliability and Work Safety	4								5			
	EB4111	Process Reliability					2				3	SU/Ü/Pr	schrP 90 min.	FWP* <sup>1</sup>
	EB4112	Work Safety					2				2	SU/Ü/Pr		
EB-30		Process Optimisation	4								5			
	EB7105	LEAN-Management (Value Stream Mapping) and FMEA								2	3	SU/Ü	schrP 90 min.	FWP* <sup>1</sup>
	EB7106	Process Optimisation in Control and Systems Engineering								2	2	SU/Ü		

1. Sem. 2. Sem. 3. Sem. 4. Sem. 5. Sem. 6. Sem. 7. Sem.														
												Internship		Bachelor thesis

\*The modules "Foreign Language I - IV" are ascending language courses in a foreign language defined in the curriculum. Students without a standardised proof of the german B2 Level have to absolve german courses until they reach the required B2 Level.

Abbreviations	
BA	Bachelor thesis
ECTS	European Credit Transfer System
mdIP	Oral examination
schrP	written examination
Pr	Internship, project work
PA	Project work with report
SU	Course teaching/exercises/tutorials
SWS	Semester periods per week
Ü	Exercise
FWP* <sup>1</sup>	Electives (depends on course offer) - a semester abroad is possible.
AWP	General Mandatory Elective

**Appendix 2 "Bachelor Industrial Engineering / Maintenance and Operation (MO)" – Matrix structure for illustrative purposes**

Overview study structure "Bachelor Industrial Engineering / Maintenance and Operation"		
ECTS	Mandatory for all	
54	<b>Fundamentals - Natural Science:</b> - 410 Technical Mechanics (5) - 805 Principles in Natural Science (10)	<b>Fundamentals - Economics:</b> - 505 Principles in Business (10) - 705 Business Law & Taxes (6) - 610 Marketing (5)
	<b>Fundamentals - Mathematics &amp; Informatics</b> - 110 & 210 Principles in Mathematics (10) - 305 Informatics for Engineering (8)	
26	Languages: English & Foreign Language I-IV (16) and 1105 Intercultural Competences (10)	
4	AWP - Compulsory elective subject (4)	
7	1210 Project with report (7)	
30	1410 Internship (30)	
14	1320 Bachelor thesis (12) & 1310 Academic writing and research (2)	
	Majors	
	<b>Engineer</b> <b>Maintenance-Technique</b> - 2705 Renewable Energies (5) - 2905 Measurement and Control Engineering (10) - 2410 Electrical Engineering (5) - 2505 Process Engineering (5) - 2605 Design Engineering a. Materials Science (5) - 2805 Energy Technique (5) - 3105 Process Reliability and Work Safety (5) - 3205 Process Optimization (5) - 3010 & 3020 Lab Work (5)	<b>Both</b> <b>Sustainability and IT</b> - 1705 Plant Engineering (5) - 1505 Insights into the Corporate World (5) - 1605 Sustainability (10) - 1805 Quality Management (5) - 1905 Human Resource Management and Labour Law (5) - 2010 Statistics (5) - 2105 IT in Plant Engineering (5) - 2205 Data Processing, Geoinformation Systems (5) - 2305 Energy Markets and Economic Geography (5)
75	-> Red subjects are mandatory for both majors -> Blue subject is mandatory in own major -> Elective-mandatory subjects (black printed): --> 25 ECTS from own major --> 15 ECTS from sector Sustainability and IT --> 10 ECTS from major Manager	-> Red subjects are mandatory for both majors -> From this section both majors have to choose 15 ECTS from the black printed exams
		<b>Manager</b> <b>Maintenance-Management</b> - 3805 Logistics (5) - 3305 Capital Budgeting and Financing (10) - 3405 Management (5) - 3505 MRO Strategies and Strategic Planning (5) - 3605 Globalisation (5) - 3705 Business and Start-up Planning (5) - 3905 Operational Processes (5) - 4005 Cost Accounting and Budgeting (5)
		-> Red subjects are mandatory for both majors -> Blue subject is mandatory in own major -> Elective-mandatory subjects (black printed): --> 25 ECTS from own major --> 15 ECTS from sector Sustainability and IT --> 10 ECTS from major Engineer
210		

### Appendix 3

#### Attendance requirements for the Bachelor's study programme in Industrial Engineering at Technische Hochschule Deggendorf / European Campus Rottal Inn

<b>Module</b>	<b>Course</b>	<b>Justification for attendance requirement</b>	<b>Necessary attendance</b>	<b>Consequences</b>
EB-12	Project with report	Projects and practical designs can only be carried out if active participation is guaranteed	At least 75 % of sessions offered. In justified cases of absence, substitute tasks are possible	Project work is graded as "failed"
EB-28	Laboratory work	Projects and practical designs can only be carried out if active participation is guaranteed	At least 75 % of sessions offered. In justified cases of absence, substitute tasks are possible	Module is graded as "failed".

Drafted on the basis of the Resolution of the Senate of Technische Hochschule Deggendorf of 04.07.2018 and legal supervisory approval of the Vice President of Technische Hochschule Deggendorf of 01.10.2018.

Signed  
Prof. Waldemar Berg  
Vice President

The statutes were laid down on 01.10.2018 at Technische Hochschule Deggendorf. The laying down was announced by public notice on 01.10.2018. The day of announcement is therefore 01.10.2018.