Study and Examination Regulations for the Bachelor's Program in Industrial Engineering and Management at Technische Universität Berlin

from June 17, 2015, last updated March 2, 2017

This version is an unofficial *reading version* in which changes and corrections have been included up to the date given above. The text published in the Official Notifications of Technische Universität Berlin continues to be the authoritative and legally binding version. You can find the latest version via `www.gkwi.tu-berlin.de`

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Technische Universität Berlin's Joint Commission for Industrial Engineering (GKWi) passed the following study and examination regulations for the Bachelor's degree program Industrial Engineering and Management on June 17, 2015 according to Sec. 71 (1) no. 1 in conjunction with Sec. 74 of the Berlin Higher Education Act (Berliner Hochschulgesetz - BerlHG) in the version from July 26, 2011 (Berlin Law Gazette P. 378):[1]

I General Section

Sec. 1 Area of Applicability

These study and examination regulations set down the objectives and structure of studies as well as the requirements for and execution of examinations in the Bachelor's degree program Industrial Engineering and Management. It supplements the Regulations on General Procedures for Studies and Examinations at the Technische Universität Berlin (AllgStuPO) with regulations specific to the degree program.

Sec. 2 Entry into Force/Going out of Force

(1) These study and examination regulations enter into force for the summer semester 2016.

(2) The study regulations for the Bachelor's program Industrial Engineering and Management from July 14, 2010 (TU Official Notifications p. 322) and the examination regulations for the Bachelor's program Industrial Engineering and Management from May 5, 2010 (TU Official Notifications p. 326) go out of force when these examination regulations enter into force.

(3) Beyond Sec. 1, these regulations also apply to all students already enrolled in the Bachelor's program Industrial Engineering and Management at the Technische Universität Berlin. Coursework and examinations already completed will be fully recognized. Students who are already enrolled can agree on an individual study plan with the examination committee.

II Study Objectives and Structure

Sec. 3 Qualification Objectives, Contents, and Professional Fields

(1) In their degree program, Industrial Engineering and Management students primarily work on the basic methods for drafting, planning, introducing, and operating socio-technical systems. This includes first skills in forecasting and evaluating the behaviors and results of these systems. For this, the program combines mathematics, principles of the natural sciences, economic sciences, and engineering. A special role is given to the interdisciplinary subjects and the consideration of transdisciplinary aspects in individual subject areas. The Bachelor's program in Industrial Engineering and Management at the Technische Universität Berlin is done simultaneously, that is, the various disciplines are offered at the same time, their content is linked, and the methods are integrated. Some courses are offered in German, others in English. One key aspiration of the educational concept is to rely primarily on the courses of the respective subject programs and to fulfill the same requirements as the students in those programs. Due to the Technische Universität Berlin's wide range of courses, the economic education can be combined with one of the following engineering majors:

- Civil Engineering
- Chemistry and Process Engineering
- Electrical Engineering
- Information and Communication Systems
- Mechanical Engineering

[1] confirmed by TU Berlin's Executive Committee on September 29, 2015

— Transportation Engineering

(2) The educational concept for Industrial Engineering and Management at the Technische Universität Berlin can be described as follows:

— The scientific education in the degree program Industrial Engineering and Management conveys the foundational theoretical and practical knowledge and skills necessary for students to have successful professional careers; by practicing scientific thinking, students strengthen their judgment and increase their awareness for the responsibility of the individual in society. These goals are achieved by a transdisciplinary education that takes as its starting point socially, economically, and technically relevant questions both in theory and in practice.

— One characteristic of the degree program in Industrial Engineering and Management is the core area of the integration subjects. These include scientific methods and approaches with the objective of comprehensively integrating transdisciplinary questions. The focus is on understanding and combining the language and thinking of various disciplines from engineering and economic sciences. The integration modules, in which the interdependencies of engineering and economics are shown and taught, shape the integrative character of the Industrial Engineering and Management program and implement the program's transdisciplinary aspect.

— In the economics part of the program, students of Industrial Engineering and Management obtain more extensive professional qualifications. In the Bachelor's program, the time and content restrictions force students to concentrate on the essential subjects without generally limiting the depth and breadth of the material.

— In the engineering part of the program, the focus is on a foundational education in the natural scientific disciplines as well as in the core subjects of the technical part of the major chosen. In regard to the necessary limitation of the material, this means that the foundational knowledge in the Bachelor's program can only be expanded in an illustrative way. The students of Industrial Engineering and Management therefore get to know methods and ways of thinking and working in engineering and are enabled to cooperate with the respective experts on the basis of their own judgment on engineering problems and solutions to those problems.

— Overall, in this approach there is a balanced ratio of integration, economic, and engineering subjects. In the Bachelor's program it allows for many elective possibilities and individual concentrations, as can be seen in the comprehensive catalogs of semi-elective subjects. What is decisive is that an in-depth qualification is obtained in the selected areas.

(3) The theory part of the program includes conveying basic laws and relationships of the relevant scientific disciplines, guiding students toward logical, analytical, and critical thinking, and teaching the ability to independently work on new problems and tasks from a critical perspective.

(4) The practical part of the program includes gaining knowledge about structures, processes, regulations, etc. in the desired professional field; working on key skills to implement theories in practice; developing the ability to work out sensible solutions with incomplete information and under time pressure; teaching the principles of teamwork; and practicing cooperative and constructive conflict-solving behavior.

(5) Industrial engineers are active in nearly all areas of the private sector, in particular in the industrial sector, trade, and the service sector. They also work in public management. The breadth of the possible careers corresponds to that of the education program. Typical career fields include:

— Controlling/Accounting

— Manufacturing/Production

— Financing/Investment

— Information and Communication Technology

— Innovation Management

— Logistics/Purchasing

— Marketing and Sales

— Organization and Business Planning

— Human Resources

— Project Management

— Resource Management

— Consulting Companies

These professional activities also offer many chances for later entrepreneurship, e.g. in consulting, planning offices, auditing, sales, or as independent contractors or a contractor for a production or service operation.

(6) The Bachelor's degree confirms that the graduates possess the scientific foundations and advanced knowledge of their subject needed to enable them to solve complex problems with unclear and/or unforeseeable solutions in a management or decision-making position. The Bachelor's degree also confirms that the graduates are able to take into consideration the social consequences of scientific action - even beyond the boundaries of their own subject - in their work. The knowledge, skills, and competences enable them to start a Master's program or begin their professional career.

(7) The Bachelor's program in Industrial Engineering and Management is part of a consecutive offer of studies made up of a Bachelor's program in Industrial Engineering and Management and the research-focused Master's program in Industrial Engineering and Management.

Sec. 4 Start of Studies, Regular Period of Study, and Scope of Studies

(1) Studies start in the winter and summer semester.

(2) The regular period of study is six semesters. The scope of the requirements for the degree program is calculated such that students who exclusively focus on their studies can complete the program in this time including the necessary examinations.

Sec. 5 Structure of Studies

(1) Students have the right to structure their studies individually. However, they are required to adhere to the provisions of these study and examination regulations. An example for the succession of modules is shown in the sample study schedule in Annex 2 of these regulations. This does not affect requirements arising from the definition of subject prerequisites for modules.

(2) The Bachelor's program includes 180 credit points. Modules from the following module groups must be taken:

a) Integration area: Compulsory and semi-elective modules totaling 54 credit points,

b) Economic Sciences: Compulsory and semi-elective modules totaling 54 credit points,

c) Engineering: Compulsory and semi-elective modules totaling 54 credit points,

d) Elective area: Elective modules totaling six credit points,

e) the Bachelor's thesis totaling twelve credit points (Sec. 9) and a technical pre-study internship (Sec. 9 (5)).

The allocation of individual modules to the module groups, the examination form, and the grading with credit points are set down in the module list (Annex 1).

(3) For engineering modules, students can choose among the engineering majors according to Sec. 3 (1). The selection of the engineering major is done at the latest when re-registering for the second subject-specific semester with the responsible office in the Central University Administration. When changing universities or entering for a career change (Quereinsteiger), the selection is done by submitting a request for the recognition of coursework and examinations. At any time it is possible to change the engineering major as long as all modules already passed are the compulsory modules or can be part of the degree program even after changing the major according to Sec. 39 (5) AllgStuPO. Upon request, the examination committee makes decisions on exceptions. If a module examination was failed for a final time, it is not possible to change majors.

(4) The modules in the elective area serve to obtain additional subject-area, interdisciplinary, and professional skills and can be chosen from any courses offered at the Technische Universität Berlin, other universities and higher education institutions equal to universities in the German Higher Education Framework Act's area of application or accredited higher education institutions and universities in other countries. It is recommended that students choose from the interdisciplinary courses. The modules that can be chosen also include modules for learning foreign languages.

(5) A technical pre-study internship lasting at least nine weeks must be completed. The examination committee is responsible for recognizing the pre-study internship. Details are set down in the internship regulations (Annex 3). Proof

of the internship must be submitted at the latest when registering for the last module examination. However, it is highly recommended that students complete the internship before starting their studies.

(6) To promote foreign language and intercultural competence as well as prepare students for the increasingly international professional environment of industrial engineers, an integrated study abroad program is highly recommended. This study abroad program should be done between the third and fifth subject-specific semesters. Modules that were completed during the integrated study abroad program will be recognized in addition to the modules included in the module list for the semi-elective areas as long as they correspond to the qualification objectives of the respective area.

(7) Besides conveying subject-area skills in a unique way, internships abroad give insights into the communicative, social, and cultural circumstances of professional life in other countries and are therefore strongly recommended.

III Requirements for and Execution of Examinations

Sec. 6 Purpose of the Bachelor's Examination, Academic Degree

(1) The Bachelor's examination determines whether a candidate has achieved the qualification goals according to Sec. 3.

(2) With the passed Bachelor's examination, Technische Universität Berlin via GKWi awards the academic degree Bachelor of Science (B.Sc.).

Sec. 7 Scope of the Bachelor's Examination and Calculation of the Overall Grade

(1) The Bachelor's examination is made up of the module examinations set down in the module list (Annex 1) and the Bachelor's thesis (Sec. 9).

(2) The overall grade is calculated using all module grades according to the principles in Sec. 47 (6) AllgStuPO, whereby the module examinations with the worst grades in the three module groups according to Sec. 5 (2) letters a to c, each a maximum of twelve credit points, and the module group according to Sec. 5 (2) letter d are not considered. If grades are equal, the most recently completed module is not considered. Modules that are not graded or recognized as not graded are included as a priority in these credit points.

(3) Module examinations that are failed for the first time in the first subject-specific semesters are considered not to have been taken (free attempt).

Sec. 8 Examination Forms

The examination forms are regulated in the respectively valid version of the AllgStuPO. Module examinations from the courses in other degree programs, faculties, or universities may be given in other forms than those described in the AllgStuPO. The provisions of the examination regulations and module descriptions of the department or institution holding the module apply.

Sec. 9 Bachelor's Thesis

(1) The Bachelor's thesis is typically completed in the sixth subject-specific semester. It totals 12 credit points and students have three months to complete it. If there is an important reason, the chair of the examination committee can grant an extension of up to six weeks, in case of illness up to three months. The examination committee decides

on other rules regarding exceptions. The topic of the Bachelor's thesis may be returned once within the first month after it has been assigned.

(2) The requirement for registering for the Bachelor's thesis is the successful completion of all compulsory modules in the integration area (Annex 1) and a total of at least 120 credit points. In justified exceptional cases, the examination committee may approve upon request registration for the Bachelor's thesis before the student has completed the requirements. If the Bachelor's thesis is the final examination, the registration must be completed at the latest six months after the last module examination is passed.

(3) The topic of the Bachelor's thesis must be related in content to one of the chosen modules (Sec. 5). It is recommended that the student write a short report on the type and scope of the thesis. Part of the Bachelor's thesis is a colloquium. More detailed regulations can be found in the module description.

(4) If the Bachelor's thesis is done in cooperation with an external institution, the candidates must make sure there are no constraints not related to the topic, that competent supervision is available on-site, and that the reviewers have access to all information necessary to grade the thesis. Matters related to using resources, confidentiality, or the rights to the results of the work are to be clarified with agreements between the University and the external institution before approving the topic for the Bachelor's thesis.

IV Annexes

Annex 1 – Module List

Name of Module	Scope (CP)	Exam Form	Grading
Integration Area	**54**		
Compulsory Modules Mathematics & Quantitative Methods	**48**		
Analysis I and Linear Algebra for Engineering	12	S	Yes
Analysis II for Engineering	9	S	Yes
Introduction to Computer Science (IEM)	9	S	Yes
Operations Research - Basics	6	S	Yes
Statistics I for Economics	6	S	Yes
Statistics II for Economics	6	S	Yes
Semi-Elective Modules Integration	**6**		
According to the module lists published for each semester		S/M/P	Yes
Economic Sciences	**54**		
Compulsory Modules Business Administration	**24**		
Accounting and Cost Accounting	6	S	Yes
Investment and Financing	6	S	Yes
Marketing and Production Management	6	S	Yes
Organization and Innovation Management	6	S	Yes
Compulsory Modules Economics	**12**		
Macroeconomics	4	P	Yes
Microeconomics	4	S	Yes
Economic Policy	4	S	Yes
Compulsory Module Law	**6**		
Private Commercial Law	6	S	Yes
Semi-Elective Modules	**12**		
According to the module lists published for each semester		S/M/P	Yes
Engineering (one of the concentrations according to Sec. 3 (1))	**54**		
Civil Engineering			
Compulsory Modules	**33**		
Structural Design I	6	S	Yes
Structural Materials and Structural Chemistry I	6	S	Yes
Construction Economics and Operations	6	S	Yes
Principles of Building Physics	6	S	Yes
Statics and Fundamental Strength of Materials	9	S	Yes
Semi-Elective Modules	**21**		
According to the module lists published for each semester		S/M/P	Yes
Chemistry and Process Engineering			
Compulsory Modules	**39**		
Introduction to General and Inorganic Chemistry	6	S	Yes
Principles of Physical Chemistry (IEM)	6	S	Yes
Technical Chemistry	18	M	Yes
Technical Thermodynamics	9	S	Yes
Semi-Elective Modules	**15**		
According to the module lists published for each semester		S/M/P	Yes
Electrical Engineering			
Compulsory Modules	**27**		
Introduction to Computer Science - Specialization	6	S	Yes
Electrical Networks	6	P	Yes
Principles of Electrical Engineering	9	P	Yes
Integral Transforms and Partial Differential Equations for Engineering	6	S	Yes
Semi-Elective Modules	**27**		
According to the module lists published for each semester		S/M/P	Yes

Name of Module	Scope (CP)	Exam Form	Grading
Information and Communication Systems			
Compulsory Modules	**30**		
Application Systems	6	P	Yes
Introduction to Computer Science - Specialization	6	S	Yes
Computer Networks and Distributed Systems	6	S	Yes
Computer Architecture	6	P	Yes
System Programming	6	P	Yes
Semi-Elective Modules	**24**		
According to the module lists published for each semester		S/M/P	Yes
Mechanical Engineering			
Compulsory Modules	**42**		
Factory Operation and Industrial Information Technology	6	P	Yes
Principles of Electrical Engineering (Service)	6	S	Yes
Construction 1	6	P	Yes
Mechanics E	9	S	Yes
Technical Thermodynamics	9	S	Yes
Materials Science	6	P	Yes
Semi-Elective Modules	**12**		
According to the module lists published for each semester		S/M/P	Yes
Transportation Engineering			
Compulsory Modules	**36**		
Introduction to Transport Systems	6	P	Yes
Construction 1	6	P	Yes
Mechanics E	9	S	Yes
Technical Thermodynamics	9	S	Yes
Materials Science	6	P	Yes
Semi-Elective Modules	**18**		
According to the module lists published for each semester		S/M/P	Yes
Elective Area	**6**		
All modules from the area of application of the German Higher Education Framework		S/M/P	Yes
Bachelor's Thesis	**12**		
Bachelor's Thesis		-	Yes

Annex 2 – Sample Study Schedule

The sample study schedules are for full-time studies. If the student is studying part-time, they are urgently advised to work out an individual study schedule in an advising session with the subject advising service. The information is given in credit points (CP).

Starting Studies in the Winter Semester (WS)

	Semester					
	1st WS 30 CP	Analysis I and Linear Algebra for Engineering (12 CP)		Introduction to CS (IEM) (6/9 CP)	Micro-economics (4CP)	Engineering Major (*)
	2nd SS 30 CP	Analysis II for Engineering (9 CP)	Intro CS (IEM) (3/9 CP)	Accounting and Cost Accounting (6 CP)	Macro-economics (4 CP)	Engineering Major (*)
Mobility Window	3rd WS 30 CP	Statistics I for Economics (6 CP)	Marketing and Production Mngmt. (6 CP)	Economic Policy (4 CP)	Engineering Major (*)	
Mobility Window	4th SS 30 CP	Statistics II for Economics (6 CP)	Operations Research - Basics (6 CP)	Organization and Innovation Mngmt. (6 CP)	Engineering Major (*)	
Mobility Window	5th WS 30 CP	Investment and Financing (6 CP)	Semi-Electives Economic Sciences (12 CP)		Engineering Major (*)	
	6th SS 30 CP	Semi-Electives Integration (6 CP)	Private Commercial Law (6 CP)	Elective Area (6 CP)	Bachelor's Thesis (12 CP)	

** Depending on the chosen engineering major, credit points can be moved to another semester.*

Engineering Majors

			Mobility Window			
Semester	**1st WS**	**2nd SS**	**3rd WS**	**4th SS**	**5th WS**	**6th SS**
Civil Engineering						
Structural Design I					6	
Structural Materials and Structural Chemistry I			6			
Construction Economics and Operations		6				
Principles of Building Physics			6			
Statics and Fundamental Strength of Materials	9					
Semi-Elective Modules			6	12	6	
Chemistry and Process Engineering						
Introduction to General and Inorganic Chemistry	6					
Principles of Physical Chemistry (IEM)		6				
Technical Chemistry			7	11		
Technical Thermodynamics		3	6			
Semi-Elective Modules					15	
Electrical Engineering						
Introduction to Computer Science - Specialization		6				
Electrical Networks		6				
Principles of Electrical Engineering	9					
Integral Transforms and Partial Differential Equations for Engineering			6			
Semi-Elective Modules			6	12	9	
Information and Communication Systems						
Application Systems				6		
Introduction to Computer Science - Specialization		6				
Computer Networks and Distributed Systems			6			
Computer Architecture	6					
System Programming		6				

			Mobility Window			
Semester	**1st WS**	**2nd SS**	**3rd WS**	**4th SS**	**5th WS**	**6th SS**
Semi-Elective Modules			6	6	12	
Mechanical Engineering						
Factory Operation and Industrial Information Technology			2	4		
Principles of Electrical Engineering (Service)			6			
Construction 1		6				
Mechanics E	9					
Technical Thermodynamics				3	6	
Materials Science		3	3			
Semi-Elective Modules				6	6	
Transportation Engineering						
Introduction to Transport Systems		6				
Construction 1			6			
Mechanics E	9					
Technical Thermodynamics				3	6	
Materials Science		3	3			
Semi-Elective Modules				12	6	

Starting Studies in the Summer Semester (SS)

	Semester					
	1st SS 30 CP	Analysis I and Linear Algebra for Engineering (12 CP)	Intro CS (IEM) (3/9 CP)	Micro-economics (4CP)	Engineering Major (*)	
	2nd WS 30 CP	Analysis II for Engineering (9 CP)	Introduction to CS (IEM) (6/9 CP)	Accounting and Cost Accounting (6 CP)	Macro-economics (4 CP)	Engineering Major (*)
Mobility Window	**3rd SS 30 CP**	Statistics I for Economics (6 CP)	Marketing and Production Mngmt. (6 CP)	Economic Policy (4 CP)	Engineering Major (*)	
	4th WS 30 CP	Statistics II for Economics (6 CP)	Operations Research - Basics (6 CP)	Organization and Innovation Mngmt. (6 CP)	Engineering Major (*)	
	5th SS 30 CP	Investment and Financing (6 CP)	Semi-Electives Economic Sciences (12 CP)		Engineering Major (*)	
	6th WS 30 CP	Semi-Electives Integration (6 CP)	Private Commercial Law (6 CP)	Elective Area (6 CP)	Bachelor's Thesis (12 CP)	

** Depending on the chosen engineering major, credit points can be moved to another semester.*

Engineering Majors

			Mobility Window			
Semester	**1st SS**	**2nd WS**	**3rd SS**	**4th WS**	**5th SS**	**6th WS**
Civil Engineering						
Structural Design I				6		
Structural Materials and Structural Chemistry I		6				
Construction Economics and Operations			6			
Principles of Building Physics				6		
Statics and Fundamental Strength of Materials	9					
Semi-Elective Modules			9		12	
Chemistry and Process Engineering						
Introduction to General and Inorganic Chemistry		6				
Principles of Physical Chemistry (IEM)	6					
Technical Chemistry				7	11	

			Mobility Window			
Semester	**1st SS**	**2nd WS**	**3rd SS**	**4th WS**	**5th SS**	**6th WS**
Technical Thermodynamics	6	3				
Semi-Elective Modules			9	6		
Electrical Engineering						
Introduction to Computer Science - Specialization			6			
Electrical Networks	6					
Principles of Electrical Engineering		9				
Integral Transforms and Partial Differential Equations for Engineering			6			
Semi-Elective Modules			6	12	9	
Information and Communication Systems						
Application Systems	6					
Introduction to Computer Science - Specialization	6					
Computer Networks and Distributed Systems				6		
Computer Architecture		6				
System Programming			6			
Semi-Elective Modules			6	6	12	
Mechanical Engineering						
Factory Operation and Industrial Information Technology				2	4	
Principles of Electrical Engineering (Service)			6			
Construction 1			6			
Mechanics E	9					
Technical Thermodynamics			3	6		
Materials Science	3	3				
Semi-Elective Modules				6	6	
Transportation Engineering						
Introduction to Transport Systems		6				
Construction 1			6			
Mechanics E	9					
Technical Thermodynamics			3	6		
Materials Science	3	3				
Semi-Elective Modules			6	6	6	

Annex 3 – Internship Regulations

Sec. 1 Introduction

(1) These internship regulations set down the provisions for the technical pre-study internship in the Bachelor's program Industrial Engineering and Management at Technische Universität Berlin.

(2) The practical work in an industrial company is an important condition for later professional work. It supports the understanding for and application of study program content and is therefore a key requirement for successful studies.

(3) Industry and business benefit from the students' practically oriented education in the Industrial Engineering and Management program. Students are to be supported during their training, and they are to be given wide-ranging and instructive internship tasks.

Sec. 2 Training Objectives and General Information

(1) The internship serves in particular to introduce the student to industrial production and should convey essential, basic knowledge. The focus is on obtaining manual skills and basic professional knowledge. With expert instruction, the intern should get to know materials and construction parts in terms of their workability and processability and obtain an overview of the production facility, processes, working procedures, and the structure and functioning of products.

(2) Besides this, the interns should get to know the various technical areas of a company in terms of their tasks and working methods as well as the ways in which they interact; they should also gain insights into the individual and social problems of the working world. These are particularly important for the determination of their own social location and cannot be imparted by the university. The insights and experiences gained during the internship make up an important foundation for understanding the theoretical content of the study program.

(3) The professional bridging function is already effective in the first weeks of the internship when the interns are to determine whether they have sufficient motivation for a technical profession. It is further emphasized when the interns obtain a greater overview and are thus supported in creating a basis for making a decision about their later professional field.

Sec. 3 Time Requirements

(1) The total duration of the internship in the Bachelor's program is at least nine weeks with weekly working hours of at least 35 hours. Proof of completion of an internship according to Sec. 5 (5) of the study and examination regulations is a requirement for successfully completing the Bachelor's program Industrial Engineering and Management. It is also recommended that students complete additional internships.

(2) It is highly recommended that students complete the internship before starting their studies as long as it is carried out according to these internship regulations. Splitting the internship to a maximum of two different companies is possible, whereby in this case at least four weeks must be completed in each company (with the minimum total time still equaling nine weeks).

(3) Because the required internship time is so short, vacation and participation in training at vocational colleges during the internship will not be counted as internship time. Working time missed due to illness or other circumstances must be made up.

(4) Proof of the internship must be submitted at the latest when registering for the last module examination. The intern is responsible for ensuring that all required documents are submitted as early as possible so that the internship can be recognized on time.

Sec. 4 Content

(1) Depending on the chosen major, the internships are based on the internship plans listed in Sec. 7.

(2) Students may individually structure their internship within the fields of activity listed in the respective internship plan.

Sec. 5 Internship Spot

(1) The interns should look for an internship spot on their own initiative. The content and organizational preparation of the internship is generally the responsibility of the company.

(2) The internship company should be a production or service company from the industrial sector or a non-university research institution. Work at a university or higher education institution in the context of university projects or initiatives cannot be recognized. The internships can be done in part or in whole either in Germany or abroad.

(3) Information on recognized training centers can be obtained from the local Chamber of Industry and Commerce. A student may request that the examination committee make a decision on the suitability of a particular company.

Sec. 6 Recognition of Internship

(1) The examination committee is responsible for recognizing the professional internship. Requests for recognition of an internship are to be submitted to the examination committee.

(2) After the entire internship is completed, the student must submit a request for recognition. The recognition form, internship certificate, and weekly overview must be turned in to the examination committee. The documents should be submitted within six months of the conclusion of the internship. For internships or other similar activities (Sec. 6 (7)) done before starting studies, the corresponding documents should be submitted within the first two semesters.

(3) An internship certificate from the training center is to be submitted that includes the following information:

a) Training center and contact information for the internship director,

b) Intern's surname, first name, and date and place of birth,

c) Start and end of internship,

d) Exact information on days absent even if no days were missed,

e) Description of the tasks according to area, type, and duration, and

f) Confirmation of the reflection on the tasks and what was learned within the training center with a written report or discussion with the internship director.

(4) The weekly overview is made up of tables in which, for each day of the week, the task done and its duration are entered using keywords. The weekly overview thus gives information about the content, structure, and course of the internship. The weekly overview is also to be signed by the respective internship director with a signature and company stamp. When recognizing vocational training, as an alternative the written vocational training proof (reports) may be submitted.

(5) The examination committee decides on the extent to which the internship corresponds to the internship regulations and whether it can be recognized as an internship for the program. It can also require additional internship weeks if the internship certificate does not show that certain parts of the internship were carried out sufficiently.

(6) If an internship is recognized, the examination committee reports this to the responsible office in the Central University Administration.

(7) Internships or activities done elsewhere will be recognized in full as long as they fulfill the requirements of these internship regulations in the case of

a) changes in majors or degree programs,

b) work-study activities,

c) vocational training, and

d) professional activity.

(8) Students who cannot adhere to the internship regulations for exceptional reasons must request a change in the structure of their internship from the examination committee and submit any documentation necessary.

Sec. 7 Internship Plans

(1) Major Civil Engineering: The internship is to give the interns insights into various construction processes and must therefore be done at construction sites, planning offices, or with structural engineers. For the manual component, only companies in the mainstream construction industry with the right to give vocational training by the Industry of Commerce and Trade may be chosen for the internship. At least three of the following fields of activity should be included:

a) Formwork and Reinforcement Work

b) Concreting Work

c) Steel Construction and Locksmith Work

d) Bricklaying Work

e) Carpentry Work

f) Earth, Underground, and Street Work

g) Maintenance Work on Structures

h) Planning and Inspection

(2) Major Chemistry and Process Engineering: The internship is to be done in a company in the chemical or pharmaceutical industry either in a chemical production unit and/or in process development (technical center). The area described in letter a is mandatory, the others are elective. If the student chooses, part of the internship can be done in a chemical-analytical laboratory, e.g. in a laboratory at a large industrial company, in waterworks, food factories, etc.:

a) Basic understanding of production processes: Safety and occupational protection, energy use, reaction processes and conditions, reactors, continuous and discontinuous processes, data logging and processing, quality assurance and management, material preparation, processing: Basics of material separation, devices and their functioning

b) Environmental protection and waste disposal: Devices, analytical processes, legal regulations

c) Service and maintenance of chemical plants

d) Chemical-analytical laboratory: Preparation, taking samples, analysis procedures, evaluation, documentation, quality assurance and management, preparatory work: Making preparations, separation, and cleaning, Characterization

e) Work organization and communication: Work planning, information and communication systems

(3) Major Electrical Engineering: The area under letter a is required; an apprentice workshop is particularly suitable for this. The areas under letters b to d are elective and cannot be done in an apprentice workshop.

a) Basics of production in the area of electrical engineering: Producing mechanical, electro-mechanical, and electrical connections: Making connections using screws, nuts, and washers; securing elements, especially spring washers, sprockets, and paints; putting connecting parts, especially cable lugs, ferrules, and plugs, on cables; creating soldering joints for mechanical and electrical use with electric soldering irons; connecting cables, especially by soldering, clamping, and securing; making coated circuit boards, fitting them with component parts according to instructions, and wiring them into laboratory wires

b) Quality assurance, statistical surveys and assessments, measurement and testing procedures including basics such as statistical tests, tolerances, fits, random sample tests, etc. and an overview of the entire system of quality management

c) Putting together building components and parts for mechanical units, especially for plug-in units and housings as well as electrical units, and linking them with transmission, duct, or flat ribbon wiring

d) Maintenance and repairs of electrical devices and systems, checking devices, systematically finding and fixing errors, conceptualizing and implementing preventive measures for avoiding errors

(4) Major Information and Communication Systems: The area under letter a is required; an apprentice workshop is particularly suitable for this. The areas under letters b to e are elective and cannot be done in an apprentice workshop.

a) Basics of production in the area of information and communication technology: Producing mechanical, electromechanical, and electrical connections: Making connections using screws, nuts, and washers; securing elements, especially spring washers, sprockets, and paints; putting connecting parts, especially cable lugs, ferrules, and plugs, on cables; creating soldering joints for mechanical and electrical use with electric soldering irons; connecting cables, especially by soldering, clamping, and securing; making coated circuit boards, fitting them with component parts according to instructions, and wiring them into laboratory wires

b) Programming and system and network administration, handling operating systems, setting up networks

c) Quality assurance, statistical surveys and assessments, measurement and testing procedures including basics such as statistical tests, tolerances, fits, random sample tests, etc. and an overview of the entire system of quality management

d) Putting together building components and parts for mechanical units, especially for plug-in units and housings as well as electrical units, and linking them with transmission, duct, or flat ribbon wiring

e) Maintenance and repairs of electrical devices and systems, checking devices, systematically finding and fixing errors, conceptualizing and implementing preventive measures for avoiding errors

(5) Major Mechanical Engineering: From each of the following letters a to c, the student must show proof of work: The order in which the student works on the areas is flexible. An apprentice workshop is particularly well-suited for these areas. The areas under letters d and e cannot be done in an apprentice workshop.

a) Manual work: Learning basic relationships when working with metal and plastic by independently using process forces and process controlling in the areas of marking, filing, sawing, reaming, thread cutting, aligning, bending, work with bench grinder, drilling, welding, soldering, bonding, tempering of tools and parts (soft annealing, diffusion annealing, normalizing, hardening, and annealing). Outplant welder training (DVS training sessions or similar) will be recognized.

b) Mechanized work: Learning the key mechanical elements of machine tools and the cause-effect relationships for the workpiece machining. The process forces when carrying out the listed activities are created mechanically. The intern carries out the process control largely independently: Rotating, milling, grinding, drilling, sinking, bending.

c) Automated work: Learning the basics of operating automated machine tools. Experiencing the possibilities and limitations of modern production technologies for the following selected tasks: Rotating, milling, grinding, drilling, sinking, welding, soldering, bonding.

d) Quality assurance, statistical surveys and assessments, measurement and testing procedures including basics such as statistical tests, tolerances, fits, random sample tests, etc., and an overview of the entire system of quality management

e) Pre-assembly and final assembly in the individual and serial production of machines, vehicles, devices, or units, Maintenance and repairs in the area of mechanical engineering

(6) Major Transportation Engineering: The area under letter a is required; an apprentice workshop can be suitable for this. The other areas are elective.

a) Production and assembly: Metal and plastic processing, production in general machine, vehicle, aerospace, and ship construction; marine technology; pre-assembly and final assembly; surveying work on construction sites; construction site work for concreting work, steel construction, street work, earth construction, railway construction; maintenance and repairs of vehicles and facilities

b) Development of transport facilities or vehicles: Project planning, drafting, construction, trials, test fields

c) Organization, planning, and operation: Work preparation, production guidance and control, operational management and organizations, statistical surveys and data preparation, planning for land, air, and sea transport, organization and operation of transport companies, transport management and control.