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No 8

Joint Internship Regulation
for the Bachelor degree courses in
COMPUTER ENGINEERING
COMPUTER SCIENCE AND COMMUNICATIONS ENGINEERING
CONTROL AND INFORMATION SYSTEMS
ELECTRICAL AND ELECTRONIC ENGINEERING
MATERIAL TECHNOLOGY
MECHANICAL ENGINEERING
and the Master degree courses in
COMPUTER ENGINEERING
COMPUTER SCIENCE AND COMMUNICATIONS ENGINEERING
CONTROL AND INFORMATION SYSTEMS
ELECTRICAL AND ELECTRONIC ENGINEERING
MECHANICAL ENGINEERING
within the internationally-oriented programme of
INTERNATIONAL STUDIES IN ENGINEERING (ISE)
at the Duisburg-Essen University
dated 23 February 2005

Based on §2 section 4 and §94 section 1 of the Higher Education Act (Hochschulgesetz - HG) of the Land of North-Rhine/Westphalia dated 14 March 2000 (NRW Gazette of Laws and Ordinances p. 190), last amendment per law dated 16 December 2003 (NRW Gazette of Laws and Ordinances p. 771), the Faculty 5 – Faculty for Engineering (located in Duisburg) of the Duisburg-Essen University has adopted the following Internship Regulation:

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I. General provisions

§ 1

Area of application

The present Internship Regulation is based on the Examination Regulation for the internationally-oriented degree courses within the programme of "International Studies in Engineering" (ISE) at the Duisburg-Essen University (published in the "Verköndungsblatt" of the Duisburg-Essen University - Bulletin No 18, dated 1 August 2003, in the following called Examination Regulation). It contains the rules for the practical training (internship) of students within the programme of International Studies in Engineering (ISE).

§ 2

Aim of the internship

(1) The practical training (internship) in industrial companies helps the students to understand the lectures better and to participate actively in the exercises offered within the ISE programme. As a prerequisite for the successful completion of the studies, with effects for the student's future career prospects, it is an integral part of the degree programme. Already in the run-up to his or her university studies, the future student is supposed to get acquainted with basic practical methods and procedures.

However, the teaching of manual skills is only of secondary importance during the internship, making it essentially different from an apprenticeship. In the first place, the intern student shall gain insight into operational processes, organisational and corporate social structures.

(2) In the later course of the university studies, the internship shall complement the studies and deepen theoretical knowledge by highlighting its practical relevance. During the internship the student shall have the opportunity to get to know some areas of an industrial company and to put into practice his or her knowledge acquired at university. Another crucial aspect is to become aware of the sociological side of the corporate working world. The intern student shall also learn to understand the company as a social structure and experience the relationship between managers and staff to be fully able to comprehend his or her own future position and career prospects.

Already during the first few weeks of the internship the practical aspects of the internship become effective, because the intern student will be able to realise whether he or she is sufficiently motivated for a technical career. This is even more important in the further course of the internship, when the student gets a major insight and is enabled to make a career choice based on his or her practical experience.

§ 3

Scope and duration

(1) Based on §7 of the Examination Regulation, the Faculty of Engineering requires the students within the programme of "International Studies in Engineering" to complete an industrial practical training (internship) of an overall duration of 14 weeks for Bachelor degree courses and of an additional 6 weeks for Master degree courses.

(2) The practical training can consist of several separate internships which may not be shorter than two weeks each. It is recommended to undergo practical training for the longest possible periods of time.

§ 4

Voluntary industrial internship

The prescribed weeks mark the minimum duration of the compulsory internship. It is highly recommended to complete further voluntary industrial placements at relevant companies.

§ 5

Practical training providers

(1) Given the knowledge and practice that the student is supposed to obtain through the internship, the observation of corporate working methods and the understanding of social aspects within the working process, it is necessary to complete the internship with a medium-sized or big company which is recognised as a vocational training provider by the Chamber of Commerce and Industry. In addition, internships are possible at all sort of companies that guarantee practical training according to the standards laid down in this Regulation.

Businesses in the field of trade, maintenance and services with no industrial production at all shall not be eligible. For the same reason no recognition shall normally be granted for practical work at an institute belonging to a university (that is as student assistant), at the university's associate institutes, in one's own company or the enterprise of relatives.

(2) The competent Chamber of Commerce and Industry (Industrie- und Handelskammer) and the career guidance department of the job centre (Berufsberatung des Arbeitsamtes) will provide information about companies suited for an industrial placement. The university is unable to arrange internships for the students; however, it will help to identify companies offering internships through the Examination Board (Prüfungsausschuss) of the ISE programme, the Internship Office (Praktikantenamt) and the practical training office (Praktikumsbüro) of the Academic Centre for Studies and Career (AKZENT).

(3) During the internship the students are subject, without exception, to the corporate rules of the practical training provider. It is expected that the intern students excel by their willingness to cooperate, helpfulness and collegiality. The success of the internship depends on the interest and commitment displayed by the interns, while the students themselves must take care that the compulsory contents of the practical training are covered.

(4) The intern students are attended by a supervisor or any other suitable person at the industrial company who shall ensure a reasonable practical training according to the given corporate training opportunities and taking into account the provisions of this Internship Regulation. He or she shall also counsel the intern students if technical questions arise.

§ 6

Legal and social position of the intern student

(1) The students themselves are responsible for organising their internship. Therefore before sending in an application or, at the latest, before starting the practical training the intern student should carefully go through the provisions governing the internship, the requirements of reporting about the practical training, etc., by making use of this Internship Regulation or, if necessary, by contacting the university's Internship Office (Praktikantenamt).

(2) The relationship between the intern student and the company becomes legally binding through the internship contract to be concluded between the two parties. This contract specifies the rights and duties of the intern student and of the practical training provider plus the type and duration of the internship.

(3) The question of insurance is governed by the applicable German laws. The competent health insurance company and mutual insurance association (Berufsgenossenschaft) can be contacted for further information. Intern students are insured against accidents at work for the duration of the internship at the insuring institution (mutual insurance association) covering the practical training provider. Pursuant to the provisions of the German Social Security Code (SGB) and the Act on Social Insurance for Employees (AVG), only working students can be exempt from the obligation to insure, because, strictly speaking, academic studies only comprise the sort of studies that take place at the university and are of a predominantly theoretical nature.

(4) The internship is considered to be part of the tertiary education and is therefore eligible to financial assistance according to the German Federal Educational Promotion Act (BAföG) For further information, please contact the competent authorities.

§ 7

Log book and certificate

(1) The intern student shall prepare a log book (DIN-A4) about the practical training with consecutive self-written short reports, drawings, wiring diagrams, etc. covering his or her practical assignments and observations. By preparing this log book, the student shall learn to present technical matters in a concise manner. The reports can describe work processes, tools, facilities, etc. They are supposed to be 1 to 2 DIN-A4 pages long per week (including eventual drawings) and must be prepared on a weekly basis. Moreover, the student is expected to report daily which type of activities he or she was engaged in and for how long. The reports can also be more extensive, describing fields of activities that took more than a week.

Every page of the report must be stamped and signed by the supervisor in charge of the intern student at the practical training provider.

(2) The respective report must show that the student was deeply involved with his or her practical assignments. Therefore it is necessary to choose some experiences and observations as an example and to treat them more in detail. However, students should refrain from describing objects or specialised facilities and procedures that are subject to secrecy. A mere listing of activities or the reproduction of the contents from technical books will not be accepted.

(3) In detail, the report shall comprise:

- a covering sheet summarising the details of the internship (running number and specification of this particular internship), company and duration of the internship (starting and ending date, duration in weeks).
- the weekly summaries as on the attached form "Internship record" (Annex A5)
- the weekly work reports (size: 1 to 2 DIN-A4 pages per week) in the form of a log book according to sections (1) and (2).

(4) The practical training provider must issue a testimonial (Zeugnis) or certificate about the internship for the student. The testimonial or certificate must include the name of the company providing the training, the department, place of training, personal data, the fields of activity and the duration plus, in the case of a testimonial, an assessment of the student's work. Working days that the student missed due to illness or vacation are not counted for the duration of the practical training and must therefore be mentioned explicitly.

§ 8

Recognition procedure

(1) The recognition of the internship is through the Internship Office (Praktikantenamt) of the respective department of the Faculty of Engineering at the Duisburg-Essen University. For the recognition, the properly completed activity report (confirmed by the company) and the certificate about the internship must be presented in the original.

(2) Testimonials and log books need to be submitted promptly to the Internship Office, that is within 6 months after completing the respective part of the practical training. An exception is made for practical work accomplished before the start of the university studies.

(3) The presented papers must clearly document the type and length of the individual parts of internship. An affidavit cannot replace a certificate about an internship.

(4) The Internship Office shall decide whether a practical training is in line with this Internship Regulation and can be recognised as part of the compulsory internship. A practical training covered by insufficient reports, which are either incomplete or not fully understandable, is only recognised in part.

§ 9**Recognition of previous practical work**

(1) Practical work accomplished before the start of the university studies is brought to the knowledge of the Internship Office during the enrollment period or at the beginning of the studies, by submitting all the necessary documents.

(2) Upon request of the student, the Internship Office of the Faculty of Engineering of the Duisburg-Essen University will decide about the recognition of times from a completed practical vocational training (apprenticeship) and job experience for the required industrial internship, based on the presented certificates and log books according to the rules and regulations of this Internship Regulation. The acknowledgement will be based on the recognition tables that are available at the Internship Office.

(3) Technical work at the German Federal Armed Forces or during the non-military service (e.g. in the field of maintenance) can be recognised for a maximum of 6 weeks as an internship for the Bachelor degree course, provided the requirements of the Internship Regulation are fulfilled (level 2 or more of service and maintenance according to the German regulations). Verification can be through submission of certificates (general certificates about the activities), testimonials of the official agency and reports covering the practical work in accordance with this regulation, though without the signature of the official agency. The German Federal Minister of Defense has decreed that the respective certificates can be issued and that reports about the practical work are permissible. Technical courses of the "Professional Promotion Service" of the Federal Armed Forces (Berufsförderungsdienst) can be recognised in addition. For information, please turn to the competent district draft board (Kreiswehersatzamt) – Professional Promotion Service.

(4) The practical training at Technical Grammar Schools and Technical Colleges and vocational training as technical assistant in the field of mechanical or electrical engineering can be recognised counting for a maximum of 6 weeks for the industrial internship, provided the corresponding documents are presented and recognised.

(5) All in all, alternative training at the Federal Armed Forces, in the course of the non-military service and at schools, as specified in sections (3) and (4), can only be recognised for a maximum duration of 8 weeks.

§ 10**Vacation, illness and absence**

Working days that the student misses due to vacation, illness or other reasons are not counted for the duration of the practical training, so in these cases the internship must be extended corresponding to the period of absence.

§ 11**Special arrangements**

Upon request, the Internship Office can make special arrangements for students with a proven physical impairment.

§ 12**Internship abroad**

It is highly recommended to accomplish a part of the practical training abroad. Properly documented internships abroad are taken into account for the compulsory industrial internship and for the compulsory stay abroad (§8 of the ISE Examination Regulation). Internships abroad are subject to the requirements contained in this Internship Regulation plus the additional requirement that the log book must be in German or in English and that the testimonial/certificate must be accompanied by a certified translation, if issued in another than the a.m. languages. Practical training abroad is expressly recommended, but must comply with this Internship Regulation in each and every article.

§ 13**Transitional provisions**

This Internship Regulation applies to all students enrolled for "International Studies in Engineering" at the Duisburg-Essen University.

Recognition shall be granted for any practical training, accomplished before this Regulation entered into force, provided it complies with the Internship Regulation for the integrated study course of Electrical Engineering or the Internship Regulation for the integrated internationally-oriented course of Information and Communication Technology at the Duisburg Gerhard Mercator University, published in the Bulletins No 15/2001 and No 6/2002.

Recognition shall be granted for any practical training, accomplished before this Regulation entered into force, provided it complies with the Internship Regulation for the integrated study course of Mechanical Engineering at the Comprehensive University of Duisburg (published in the Bulletin of the Comprehensive University of Duisburg No 74 dated 18 December 1975) or the instructions of Department 7 for the implementation of the practical training of students of the integrated study course of Mechanical Engineering dated 30 September 1996.

§ 14**Entry into force and publication**

This Internship Regulation shall enter into force with effect from 01 April 2004. It shall be published in the Bulletin of the Duisburg-Essen University.

Adopted per decision of the Faculty Council of Faculty 5 – Faculty of Engineering (located in Duisburg) of the Duisburg-Essen University on 17 October 2003

Duisburg and Essen, on 23 February 2005

The Founding University President
of the Duisburg-Essen University
University Professor Dr Lothar Zechlin

II. Additional provisions and explanatory notes for the Bachelor and Master degree courses in Computer Engineering, Computer Science and Communications Engineering, Electrical and Electronic Engineering

II.1 Aim of the internship

The internship shall provide intern students with an insight into modern methodologies with regard to the design, realisation and use of IT systems or into modern processes and facilities for the development and production of electrotechnical and IT components and systems; this shall be achieved by closely watching or actively participating in such work processes.

It is particularly desirable to engage in activities involving the acquisition of experiences in project design and management, team work and international cooperation.

III.2 Internship schedule

The internship for the Bachelor degree courses must be accomplished and presented for recognition upon registering for the final Bachelor's thesis at the latest; the internship for the Master degree courses must be accomplished and presented for recognition upon registering for the final Master's thesis at the latest.

II.3 Practical training providers

Upon request, parts of the internship for the Bachelor degree courses can also be completed at crafts enterprises. Decisions about the recognition of practical training at computer and media centres are taken upon request on a case-to-case basis.

Practical work as a student assistant at an associate institute of the Duisburg-Essen University that cooperates technically with the Faculty of Engineering can be recognised upon request, taking into account the amount of time spent working and the normal working hours of an intern student. Moreover, practical work as a working student at a company in accordance with §5 (1) can be recognised taking into account the time spent working and the normal working hours of an intern student.

II.4 Log book and certificate

If the student has worked as an engineer before enrolling for the ISE programme, it is not necessary to submit a log book. The same procedure applies for all relevant practical experiences obtained not later than a year before enrolling for the ISE programme .

II.5 Recognition of previous practical work

(1) Practical work accomplished abroad before enrolling for an ISE degree course, e.g. during a Bachelor course in Computer Science, Electronic Engineering or Computer Engineering, is recognised upon request for the internship of the Bachelor degree course. The documents filed together with the request must allow for an examination whether the practical work to which the request refers was performed in line with the requirements of this Internship Regulation. For this purpose the request must be accompanied by certificates/testimonials and a log book or, if this is not available, a list of activities specifying their nature and scope in the German or English language. The certificates must be submitted with a certified translation, if issued in another than the a.m. languages.

(2) Practical work as an engineer accomplished abroad upon successful completion of a Bachelor degree in Computer Science, Electronic Engineering or Computer Engineering is recognised upon request for the internship of the Master degree course. For this purpose the request must be accompanied by certificates/testimonials and a list of activities specifying their nature and scope in the German or English language. The certificates must be submitted with a certified translation, if issued in another than the a.m. languages.

III. Additional provisions and explanatory notes for the Bachelor and Master degree course in Mechanical Engineering

The present Internship Regulation is based on the "Framework Regulation for the Internship in the degree courses in Mechanical Engineering and Process Engineering at German Universities" adopted at the meeting of the Federation of Faculties of Mechanical Engineering and Process Engineering (Fakultätentag) in Vienna on 06 July 2000. Practical work that has already been recognised by an internship office of the faculties and departments belonging to the Federation of Faculties of Mechanical Engineering and Process Engineering are therefore fully recognised by all other internship offices of these faculties and departments without any further verification of equality.

III.1 Aim of the internship

In the run-up to the study course the future students shall get to know in practice how workpieces are produced, shaped and finished and how these products are composed and used. In addition, they are supposed to familiarise themselves with workpiece testing, the assembly of machines and equipment and their installation on site.

III.2 Internship schedule

(1) The industrial internship consists of an general internship (Grundpraktikum/GP) and an advanced internship (Fachpraktikum/FP).

(2) The documents about the completion of the general internship must be presented before taking the first examination of the Bachelor examination; the documents about the completion of the advanced internship must be presented upon registering for the Bachelor's or Master's thesis respectively.

(3) As far as possible, the general internship should be done in one period. The individual activities of the advanced internship may be completed in any order. It is preferable to gain work experience at different companies, while a placement with one company should last for a minimum of 2 weeks.

(4) Upon enrollment it will not be officially checked whether the student has already completed his or her general internship. Nonetheless it is recommended that the students complete the entire general internship before the first semester's lecture period starts, because otherwise notable delay can be caused for the further course of the studies, since during the semester breaks the students will be busy taking or preparing examinations and intensively deepening the subject matters.

III.3 General internship structure

(1) The purpose of the general internship is to get a first insight into industrial processing and to gain vital basic knowledge. The intern student is supposed to get to know different materials and ways to finish and process them and to learn about processing facilities and procedures.

(2) For the general internship practical experience must be proven from areas of work mentioned and explained in the annexes A2/1 and A3/1 of this Internship Regulation:

Annex No	Degree course
A2/1	ISE Bachelor degree course BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING
A3/1	ISE Master degree course MASTER OF SCIENCE IN MECHANICAL ENGINEERING

III.4 Advanced internship structure

(1) Through the advanced internship the student is supposed to acquire specialised knowledge about technologies and corporate management processes. Therefore it is reasonable to complete this internship during the semester break of the advanced study period. Then the advanced internship will deepen and link the practical experience obtained during the general internship and the theoretical knowledge acquired during the studies.

(2) For the advanced internship practical experience must be proven from areas of work - depending on the course of study - mentioned and explained in the annexes A2/2 and A3/2 of this Internship Regulation:

Annex No	Degree course
A2/2	ISE Bachelor degree course BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING
A3/2	ISE Master degree course MASTER OF SCIENCE IN MECHANICAL ENGINEERING

III.5 Recognition procedure

(1) Practical work that has already been recognised by an internship office of the faculties and departments belonging to the Federation of Faculties of Mechanical Engineering and Process Engineering shall be fully recognised by all other internship offices of these faculties and departments.

(2) Recognised internships of technical courses of study other than Mechanical Engineering at universities in Germany or abroad shall be recognised, provided they comply with the requirements of this Internship Regulation. For this purpose the corresponding proof must be submitted, like certificates by the company, information about the applicable internship regulation and reports written during the internship.

III.6 Gainful employment

Practical work with a main focus on earning money, for which the company does not expressly confirm that this was an "industrial placement", which however is conducive to the student's training in the sense of the present regulation, can be recognised for a maximum period of 4 weeks, provided it was carried out in the fields of work mentioned herein and at appropriate companies. It shall be necessary to submit the respective work certificates and internship reports written in accordance with this Internship Regulation, although the company does not need to sign them.

IV. Additional provisions and explanatory notes for the Bachelor degree course in Material Technology

IV.1 Aim of the industrial internship

Like other engineering courses, the Bachelor degree course in Material Technology includes a compulsory industrial internship. It aims to provide students with an insight into their chosen occupational field, orientation for their post-graduate professional career and help them understand the corporate social structures.

Getting practical experience of methods and processes relating to material technology contributes towards a better understanding and reinforcement of the content of the curriculum during the study.

IV.2 Internship schedule

(1) The internship consists of a general internship (Grundpraktikum/GP) of at least four but not more than eight weeks, and an advanced internship (Fachpraktikum/FP) of at least six weeks. In total, both the general and the advanced internship shall cover a period of 14 weeks.

(2) Proof of the completed internship must be given at least by the end of the 2nd academic year (4th semester). The general internship can also be performed before taking up the study. Appropriate technical vocational training courses at industrial enterprises, authorities or the German Federal Armed Forces (Bundeswehr) shall be recognised.

IV.3 General and advanced internship structure

(1) The aim of the general internship is to introduce the students into industrial working techniques and help them acquire basic knowledge in processing metallic and non-metallic materials. It shall cover work in the following fields:

- manual working techniques for processing material (see annex A 4/1)
- mechanical working techniques for processing material (see annex A 4/2)
- material joining techniques (see annex A 4/3)
- heat or surface treatment of material (see annex A 4/4)
- quality assurance/material testing (see annex A 4/5)

At least two of the above mentioned fields shall be covered by the general internship.

(2) The aim of the advanced internship is to deepen the knowledge of material technology processes and methods for the production and processing of metallic and non-metallic materials and products. It shall cover work in the following fields:

- metal production by employing pyrometallurgic, hydrometallurgic and blast furnace methods
- melting metallurgy and casting methods
- hot forming and cold forming of metals
- systems engineering in the above mentioned fields

- production planning and control
- product development and product management

At least three of the above mentioned fields shall be covered by the advanced internship.

IV.4 Recognition procedure

Proof of practical work performed in the context of the general and advanced internship according to §7 of this regulation shall be presented for recognition to the advisor for the Bachelor degree course in Material Technology. The decision about the recognition of practical work is taken by the advisor (Fachstudienberater).

IV.5 Gainful employment

Gainful employment for which the company does not expressly confirm that this was an "internship", which however is conducive to the student's training in the sense of the present regulation, can be recognised, provided it was carried out in the fields of work mentioned herein and at appropriate companies. It shall be necessary to submit the respective work certificates and internship reports, although the company does not need to sign them.

Annex A1

Areas of practical work in the context of the industrial internship for the Bachelor and Master degree course in Computer Engineering, Computer Science and Communications Engineering, Electrical and Electronic Engineering

Table 1: Areas of practical work in the context of the industrial internship

1.	Basic manual and mechanical activities relating to metal and plastic working (e.g. filing, sawing, chiselling, bending, scribing, gauging, boring, thread cutting, turning, milling, planing, grinding)
2.	Joining techniques (e.g. soft and hard soldering, welding, riveting, adhesive bonding, crimping, wrapping)
3.	Manufacturing of electrotechnical components, parts and assemblies (This also includes e.g. manufacturing circuit boards, printing and soldering boards and producing high quality soldered connections.)
4.	Assembly, installation, testing, maintenance and repair of devices and equipment for electro-technical and IT applications (This includes, among others, measuring and control devices, visual display terminals, micro-computers and other electronic devices.)

5. Programming (This also includes, among others, implementing simple, independent functions, e.g. device drivers, format converters, input/output functions, static and dynamic memories.)
6. Using application programmes (This also includes using programmes for spreadsheet analysis, data management and data bases, input and editing of technical drawings, wiring diagrams, texts and graphical elements, developing of multimedia representations, using network-based communication techniques, etc.)
7. Calculation, project planning, construction, computer-aided techniques, work in practical and applied informatics
8. Assembly, installation, testing, maintenance, commissioning and repair of systems for computer science, electrotechnical and IT applications
9. Work in research, testing and development laboratories and in test facilities
10. Software design, implementation and testing

It is urgently recommended to bring the activities performed during the industrial internship in line with the content and specific orientation of the academic studies as best as possible to ensure the internship can fully unfold its preparatory effect for later professional life.

However, it is not necessary to cover a minimum number of these 10 practical work areas. Likewise, the performance of activities is neither supposed to cover all nor is it restricted to those examples listed in parenthesis for a given practical work area. The purpose of those 10 practical work areas is rather to provide orientation for selecting activities intended to match the academic studies. With regard to the areas of practical work listed in Table 1, only the following two restrictions shall apply :

Not more than 5 weeks of the required minimum duration of 14 weeks for the industrial internship in the context of the Bachelor degree courses shall be dedicated to the practical work areas 1 to 3.

The areas of practical work 1 to 3 shall not be taken into account for the compulsory 6-week industrial internship for the Master degree courses.

Annex A2

A2/1 Structure of the general internship for the Bachelor degree course (ISE Bachelor of Science in Mechanical Engineering)

(1) The at least 6-week-long general internship must cover practical work in the following areas, each practical work activity shall cover a period of 1-4 weeks and at least 3 areas (totalling 6 weeks) have to be accounted for:

- GP1: Metal cutting manufacturing processes
- GP2: Metal forming manufacturing processes
- GP3: Casting manufacturing processes
- GP4: Joining and separating methods

(2) The following list contains practical work examples included in the individual areas of study GP1 – GP4 and it is recommended that the intern student should get practical experience of several of them:

- GP1: Metal cutting manufacturing processes
Filing, chiselling, sawing, manual thread cutting, turning, planing, milling, boring, counterboring, broaching, grinding, honing, lapping.
- GP2: Metal forming manufacturing processes
Open die and drop forging, cold forming/ impact extrusion, rolling, deep drawing, spinning, punching, precision blanking, bending, straightening, riveting.
- GP3: Casting manufacturing processes
Model making, mould making, wet and dry casting, casting (sand casting, gravity die casting, centrifugal casting, lost wax casting), sintering, powder metallurgy and plastics processing (extrusion, injection moulding, blow moulding).
- GP4: Joining and separating methods
Oxy-acetylene, arc and resistance welding, torch cutting, special welding and separating processes, soldering, adhesive bonding, plastic welding. Basic courses in gas fusion and electric welding held by the "Deutscher Verband für Schweißtechnik e.V." (DVS - German Welding Society) shall be recognised.

A2/2 Structure of the advanced internship for the Bachelor degree course (ISE Bachelor of Science in Mechanical Engineering)

(1) The advanced internship covers a period of at least 8 weeks and has to be completed during the academic studies.

(2) The internship can be individually planned on basis of the below listed study blocks FP1 to FP10. However, at least three internships connected with the areas FP1 to FP10 must be completed, with at least one internship covering any of the operational subjects (FP1 to FP5) and at least one internship covering any of the engineering subjects (FP6 to FP 10).

(3) It is also possible to frame the complete 8-week long internship as interdisciplinary project internship (FP10).

(4) The internship can be done abroad; the compulsory stay abroad of at least 3 months required by the ISE Examination Regulation (§8) can thus be partly covered.

Operational subjects	- FP1:	Surface engineering, thermal treatment	1-4 weeks
	- FP2:	Tool manufacturing, jig making	1-4 weeks
	- FP3:	Servicing, maintenance, repair	1-4 weeks
	- FP4:	Gauging, testing, quality control	1-4 weeks
	- FP5:	Manufacturing, installation	1-4 weeks
Engineering subjects	- FP6:	Research, development, construction, testing	1-4 weeks
	- FP7:	Production planning and control	1-4 weeks
	- FP8:	Product planning and product management	1-4 weeks
	- FP9:	Practical work relating to the degree subject as agreed with the internship office (Praktikantenamt)	1-4 weeks
	- FP10:	Interdisciplinary project internship	4-6 weeks

(5) The following list contains practical work examples included in the individual blocks FP1 – FP10 and it is recommended that the intern student should get practical experience of several of them:

- FP1: Surface engineering, thermal treatment: Surface coating: lacquering, electroplating, enamelling, powder painting, etc., including pre-treatment. Thermal treatment: normalising, soft annealing, diffusion annealing, curing as well as quenching and tempering of work pieces and tools, case hardening and nitriding.
- FP2: Tool manufacturing, jig making: Tool, jig, chucking / gauging tool and template manufacturing, model making
- FP3: Servicing, maintenance, repair: Servicing and maintenance of production equipment and plants, including their repair
- FP4: Gauging, testing, quality control: Gauging with tactile and non-contact measuring methods, use of gauging tools, surface measurement systems, practical experience of methods for quality assurance and the connections between tolerance values due to production conditions and quality costs, quality control of products and manufacturing processes.

- FP5: Manufacturing, installation: Manufacturing, pre-assembly and final assembly in the field of individual and serial production of machines, vehicles, equipment and plants.
- FP6: Research, development, construction, testing: Work in project groups, development and construction departments, research teams, testing departments.
- FP7: Production planning and control: Operations scheduling, work flow planning in production, definition of structural and process-oriented organisations, plant development, supervision and control of plants and processes (PLC, process computers, process control systems, controller programming), logistics
- FP8: Product planning and product management: Planning and placement of products, marketing, purchasing (procurement) and sales, controlling
- FP9: Practical work relating to the degree subject as agreed with the internship office: Practical work relating to degree subject not mentioned in the blocks FP1 to FP8
- FP10: Interdisciplinary project internship: One of the fields FP1 to FP8 can be selected as interdisciplinary project internship and extended accordingly to cover a period of 4-6 weeks. It is intended that the intern student should acquire practical experience of the work of an engineer as part of a team in an industrial environment with a clear division of work and that he or she should actively participate in that team of engineers in finding solutions for existing problems and tasks of the company. By way of example for such an interdisciplinary work the following can be named: work in product development, work in process development, work in planning, procurement and commissioning of large-scale industrial plants.

Note: Performing mere detail tasks does not rate as an interdisciplinary project work.

Annex A3**A3/1 Structure of the general internship for the Master degree course (ISE Master of Science in Mechanical Engineering)**

(1) Proof of completed general and advanced internships (**annexes A2/1 and A2/2**) as required for the Bachelor degree course in INTERNATIONAL STUDIES IN ENGINEERING (ISE BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING) shall be a prerequisite for enrolling on the MASTER degree course in INTERNATIONAL STUDIES IN ENGINEERING (ISE MASTER OF SCIENCE IN MECHANICAL ENGINEERING).

A3/2 Structure of the advanced internship for the Master degree course (ISE Master of Science in Mechanical Engineering)

(1) Proof of completed general and advanced internships (annexes A2/1 and A2/2) as required for the Bachelor degree course in INTERNATIONAL STUDIES IN ENGINEERING (ISE BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING) shall be a prerequisite for enrolling on the MASTER degree course in INTERNATIONAL STUDIES IN ENGINEERING (ISE MASTER OF SCIENCE IN MECHANICAL ENGINEERING).

(2) The additional internship for the MASTER DEGREE COURSE IN INTERNATIONAL STUDIES IN ENGINEERING (ISE MASTER OF SCIENCE IN MECHANICAL ENGINEERING) shall cover a minimum period of 6 weeks. If possible, 3 of these weeks should be completed before taking up study and 3 weeks during the study.

(3) The internship can be individually planned on basis of the study blocks FP1 to FP10 listed in Annex A1/2. However, at least two internships connected with the areas FP1 to FP10 must be completed, with one internship covering any of the operational subjects (FP1 to FP5) and one internship covering any of the engineering subjects (FP6 to FP10).

(4) It is possible to frame the complete 6-week long internship as interdisciplinary project internship according to annex A1/2 (FP10).

Annex A4

Areas of practical work in the context of the industrial internship for the Bachelor degree course in Material Technology

A 4/1:

Manual working techniques relating to material processing (e.g. filing, sawing, chiselling, bending, scribing, gauging, boring, thread cutting)

A 4/2:

Mechanical working techniques relating to material processing, eg. turning, milling, planing, grinding, boring, counterboring

A 4/3:

Material joining processes: oxy-acetylene, arc and resistance welding, torch cutting, special welding and separating processes, soldering, adhesive bonding, plastic welding, crimping, wrapping. Basic courses in gas fusion and electric welding held by the "Deutscher Verband für Schweißtechnik e.V." (DVS - German Welding Society) shall be recognised.

A 4/4:

Thermal or surface treatment of material: normalising, soft and coarse grain annealing, diffusion annealing, solution annealing, patenting, salt bath treatment, quenching and tempering, spheroidal carbide annealing, hot-galvanising, tinning, aluminising, electroplating, powder coating, case hardening, nitriding, treating with boron, cadmium-plating, etc.

A 4/5:

Material testing / Quality assurance: tensile, pressure, hardness, bending and notched bar impact tests, dynamical testing, metallographic and electron microscopical testing, ultrasonic testing, radiographical and X-ray examination, surface examinations, statistical evaluation of measurement series, inspection of measuring equipment, testing sets and gauging equipment

ANNEX A5: Form "Internship record"

Internship record No _____ dated from _____ to _____ 20____		_____ Name of intern student	
_____ Internship training provider		_____ Department	
Day	Practical work fields covered by the internship	Individual hours	Total hours
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Remarks by the intern student		Remarks by the internship supervisor	
_____ Date	_____ Intern student	_____ Date	_____ Internship supervisor