

Examination Regulations for the Bachelor Degree Program Mechanical Engineering at RWTH Aachen University

Attachment 3

Guidelines for the practical training

1 Goal of internship

For a sufficient understanding of technical lectures and tutorials as well as a preparation for future work, a training regarding practical basics of the chosen profession is essential.

The practical training of RWTH Aachen University students is one of the substantial preconditions for a successful course of study and is in itself part of the education.

The students should experience in practice the production of materials, their treatment, processing and forming, as well as the resulting products in their structure and way of action. Additionally they should also familiarize themselves with test procedures used to inspect completed work pieces, with the assembly of machines and devices, and with their installation on site. On top they should acquire an overview of pre-production areas, especially design and production planning.

The trainees should particularly show interest in social structures within the company.

2 Duration and schedule

Prior to start of studies

At the time of matriculation, 6 weeks of internship have to be documented (exception see section 12). It is recommended to cover these 6 weeks with areas of the basic internship. For enrollment merely the presentation of the internship confirmation (no reports) is necessary. Accreditation of the pre-study internship is not connected to the enrollment. The verification of carrying out the internship according to the guidelines as well as the possible accreditation from this takes place after the start of studies. For this, full documentation of the internship (internship confirmation and reports) must be submitted to the internship office by the end of the first semester without any specific reminder from the internship office.

During the studies

The practical training during the studies takes 14 weeks for mechanical engineering students. These should be conducted within the practical semester (7th semester) scheduled in the curriculum. The practical training in a company should at least last 3 weeks. Until registration of the bachelor's thesis the full internship must be finished and accredited.

3 Recognition of internship, credit points

Accreditation of the internship is based on the reports, the internship confirmation and an oral presentation describing the period of practical training. More detailed information can be found in sections 9, 10 and 11. For an accredited internship 14 credit points will be awarded.

4 Plan of instruction

The following training plan lists all mandatory areas of the Basic Internship and the options for Specialized Internship. It must be noted that more weeks than those listed under “maximum weeks” may not be taken into account.

Type of activity	Number of weeks	
	Minimum	Maximum
Basic Internship		
During the internship all activities from GP1 to GP4 must be covered in the stated minimum number of weeks.		
GP1 Cutting processes	2	4
GP2 Forming processes	1	2
GP3 Thermal joining and cutting processes	1	2
GP4 Primary shaping processes	1	2

Specialized Internship A

At least two of the six activities listed for the Specialized Internship A (FP1 - FP6) must be carried out.

FP1 Heat treatment	1	3
FP2 Tool and apparatus manufacture	1	3
FP3 Maintenance, servicing and repair	1	3
FP4 Measurement, inspection and quality control	1	3
FP5 Surface technology	1	3
FP6 Assembly	1	3

Specialized Internship B

Completion of Specialized Internship B is recommended for all students, but is not mandatory.

- FP7** Development, design and production planning
- FP8** Project internship specific to the studies and to the field of specialization after consultation with the internship office

Comments on the plan of instruction

The different sections of the internship can be performed in any order. It is nonetheless recommended to perform activities of the Specialized Internship after completion of the Basic Internship.

GP1: Metal cutting processes:

e.g. filing, chiseling, sawing, drilling, countersinking, galling, manual tapping, lathe turning, planing, milling, sanding, lapping, broaching, honing.

GP2: Metal forming processes: e.g. hammer and die forging, extrusion, beating out, kneading, upsetting, coining, drawing, rolling, stretch forming, cupping, metal spinning, stamping, fine-edge blanking, bending, leveling, riveting.

GP3: Thermal joining and cutting processes:

e.g. gas welding, arc welding, resistance welding, flame cutting, special welding and thermal cutting techniques, brazing. Basic trainings in gas melting and arc welding of the "German Association for Welding Techniques" (Deutscher Verband für Schweißtechnik e.V.) will be recognized.

GP4: Primary shaping techniques for iron, non-ferrous metals, plastics:

Structure and assembly of a model, composition of model boxes and cores, mould making, manual forming with models and jigs, introduction to dry-moulded and green sand casting, work at the core moulding and casting facilities (sand casting, precision casting, chill casting, die casting, centrifugal casting, continuous casting).

Important: The training must include observation of the casting process.

Sintering: producing mouldings by means of powder metallurgy.

Extrusion of plastics.

FP1: Heat treatment:

e.g. normalizing, soft annealing, diffusion annealing, curing and roughing of work pieces and tools, case hardening and nitriding.

FP2: Tool and apparatus manufacture:

e.g. manufacture and repair of tools, apparatus, chucks, measuring tools, jigs.

FP3: Maintenance, servicing and repair:

e.g. maintenance and repair of equipment and machines.

FP4: Measurement, inspection and quality control:

e.g. mechanical, electrical, pneumatic, optical measurement techniques, gauges, surface measurement technologies, special measurement techniques in mass production; introduction to manufacturing-related machining tolerances and cost/precision ratios.

FP5: Surface technology:

e.g. surface coatings (varnishing, galvanizing, enameling, fluidized bed coating etc.) including preparation.

FP6: Assembly:

e.g. pre-assembly and final assembly in one-off and high-volume production of machines, vehicles, apparatus and installations.

FP7: Development or design of machines, apparatus and technologies, production planning.

FP8: Project internship specific to the studies and to the field of specialization after consultation with the internship office:

Students should be introduced to the engineer's working environment through practical work at a company closely related to their specific studies and field of

specialization. Know-how and abilities previously acquired during the studies shall be applied.

5 Application for an internship

Students have to look for a suitable internship themselves. Before the training starts, the future trainee should become acquainted with the regulations governing the internship, the report etc. on the basis of the guidelines or in special cases directly with the Internship Office of the Faculty of Mechanical Engineering at RWTH Aachen University.

The Employment Office and the local Chamber of Industry and Commerce certify suitable recognized companies for trainees.

6 Companies for training

Domestically, only companies certified for training purposes by the Chamber of Industry and Commerce can be considered for the Basic Internship and for the Specialized Practical Training A, since here exclusively next to acquiring an inside view of the industrial working environment (with its cost pressures and tight deadlines) also gaining an insight into the social component of the work process is possible.

Internships at companies in the craft trades sector, which generally specialize in maintenance and repair work, with no independent production, or at university institutes or self-owned or parental companies, will not be approved.

Internships at job tutoring or research companies can be approved only in special cases after consultation with the internship office and up to a maximum of no more than 6 weeks of basic internship.

The total length of all training outside industry may not exceed 6 weeks. All internships must be authorized by the internship office before the internship starts. The plan of instruction has to be followed.

7 Behavior of trainees in the company

Trainees are not to be given special treatment during their practical training. They can gain respect and recognition of their superiors and colleagues by closely observing company regulations, complying in an exemplary manner with work schedules and company discipline, and trying to excel in diligence, performance and cooperativeness. Apart from organizational aspects, machine technology and the relationship between machine and manual work, the trainees should gain an insight into the human side of company operations and its influence on the manufacturing process.

They should experience the relationship between lower and middle level executives and workers in the company, and try to empathize with their social problems.

8 Supervision of trainees

In the companies, the trainees are usually under the care of a training supervisor, who provides for appropriate training in line with company capabilities and the internship regulations. He or she will instruct trainees about relevant matters in conversations and discussions.

Furthermore, the trainees will be assigned a mentoring professor by the internship office who is available for technical matters during the internship.

University trainees are not required to attend vocational colleges. Voluntary participation in in-company theory instruction classes may not shorten the already brief internship period.

9 Report on practical training

The trainees have to compile a report during their internship about their activities and observations.

The report, which should describe the various areas of the training in a single coherent text (no daily reports), should document experience gained in the work process (processing examples, problems during the manufacture of engineering products, machine defects, impact of machines on humans and the environment, problems of work organization).

A short description of the internship company must be included (line of business, size, products). Either reporting notebooks or stapled DIN A4 sheets are to be used for the reports.

The report should be about 2 DIN A4 pages per week in length (sketches and text).

The reports should be computer-printed. Work sheets and copies (e.g. of regulations, literature etc.) are not acceptable substitutes for self-written reports. All reports must be stamped and signed by the instructor.

10 Internship confirmation

On completion of the internship, the trainee receives a confirmation from the company stating the length of the training in various work areas and any days of absence from the company due to sickness or vacation. The internship confirmation must be issued by the internship company. Confirmations from employment agencies cannot be accepted.

11 Accreditation of the internship and overall certificate of approval

Accreditation of the internship and issuing of the overall certificate are carried out by the Internship Office of the Faculty of Mechanical Engineering at RWTH Aachen University. The accreditation procedure involves the student's report, the confirmation and an oral presentation describing the internship.

Report, confirmation

For accreditation of the internship, presentation of the report according to section 9 and the internship confirmation according to section 10 in the original is obligatory. In any case, type and duration of the training in the different work areas must be apparent at all times from the documents. Affidavits are not an acceptable substitute for internship confirmations.

The internship documents are to be presented to the internship office for approval at the latest 6 months after completion of the internship. Newly enrolled students can submit the documents up to the end of the first semester at the latest. If documents are handed in late, it may lead to the non-recognition of the internship due to a lack of verifiability.

The internship office decides in how far the practical training meets with the regulations and whether it can be accredited as an internship. The office may stipulate additional weeks of training if the confirmation and the report do not provide evidence of adequate training in certain areas of the internship. If the report on a period of the training is carelessly written or indicates a lack of understanding, the training period may be rejected or may be accredited only in part. The internship office confirms the approved duration of the internship on the confirmation issued by the internship company submitted with the report.

The internship office will not notify students of the outcome of the accreditation process. It is the student's duty to make sure that his or her internship has been accredited. It is recommended that students should enquire about the accreditation of their internship in due time, in case certain areas of work need to be repeated or supplemented.

Presentation

The trainees report on their practical training in form of an oral presentation at the institute of their mentoring professor of the Faculty of Mechanical Engineering. The type and duration of the oral presentation are to be discussed with the mentoring professor. After the presentation and the ensuing discussion the mentoring professor issues a confirmation, which must be presented at the internship office together with all accredited internship confirmations in order to receive accreditation of the practical training.

Overall internship certificate

The overall certificate is issued only if the internship has been fully completed. All practical training confirmations approved by the internship office and the oral presentation confirmation issued by the mentoring professor must be presented in the original. Objections to any decisions of the internship office or the mentoring professor can be made to the Examination Board.

12 Military service, community service

Future students who can prove that they cannot carry out the 6 weeks of internship required before enrollment because their military or community service has not yet ended may be admitted to the university without the pre-study internship.

Practical instruction in technical military units can be approved as part of internship, if the work was part of a material maintenance stage of training. Each material maintenance stage will be counted as two weeks of internship.

The relevant documentation must be submitted to the internship office for approval. No reports need to be handed in for such training. Future students themselves must apply for a posting to a suitable technical unit before starting their military service. Information can be obtained at the military service advice center or the local army recruiting office. All the above requirements apply equally to community service.

13 Accreditation of previous practical activities

Approval of any previous practical activities, for example completed professional training, periods of professional work etc. can be given so long as the areas of work specified in section 4 have been covered during the training.

14 Practical training abroad

It is recommended that students also perform their internships in abroad. The maximum period for this is usually 10 weeks. For accreditation of such internships the above regulations are binding. To prevent problems of accreditation, it is suggested to coordinate the internship abroad with the internship office.

The International Office has further information on internships abroad and on possible financial support from the German Academic Exchange Service (DAAD).

These guidelines apply without exception to all future students living in foreign countries and intending to study at RWTH Aachen University. At least half of their internship should be performed at companies in German-speaking countries.

The report and internship confirmation must be in German or English. The internship confirmation may also be an officially attested translation into German or English, as long as the original in the corresponding national language is also presented.

15 Exchange programs

The duration and content of the internship within the framework of an exchange program (e.g. TIME-Dual Diploma Program) are regulated by contractual arrangements of the partner universities.

16 Internship contract

The trainee relationship becomes legally binding through an internship contract agreed and signed by the trainee and the company.

All the rights and duties of the trainee and the company should be stated in the contract.

17 Vacation, sickness, days of absence

Due to the short periods of the trainings, trainees are not allowed to take holidays. Days of absence due to sickness must invariably be made up for. In cases of

absence, the trainee should ask the internship company to extend the contract to perform the training period to the necessary degree.

18 Compulsory insurance

Information concerning the compulsory insurance may be obtained from the respective health insurance company. Insurance for internships abroad is guaranteed in form of a special training insurance taken out by the trainee respectively the company.

19 Transitional regulations

Any practical training which has commenced before these regulations come into effect will be recognized insofar as it has been carried out in accordance with the regulations pertaining when the period of internship began. If the number of weeks of recognized trainings is greater than 20, no Specialized Internship A needs to be performed.

20 Postal address of the Internship Office

RWTH Aachen University

Internship Office of the Faculty of Mechanical Engineering

Univ.-Prof.Dr.-Ing. M. Modigell

Eilfschornsteinstr. 18, Room 313

52056 Aachen

Email: praktikantenamt@fb4.rwth-aachen.de

Website: www.maschinenbau.rwth-aachen.de/en/studies/internship-office.html

Telephone: +49 (0)241 80 95306

Fax: +49 (0)241 80 92701

Office hours: see website

Please note: Only the German version of these guidelines (“Richtlinien für die praktische Tätigkeit”) is legally binding.