

Appendix 2: Guidelines for the Industrial Internship

Guidelines for the Practical Education and Training of Students in the Bachelor's Degree Program Aerospace at the Technical University of Munich

Department of Aerospace and Geodesy
TUM School of Engineering and Design
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Applicable to all students who commence their studies in the Aerospace field at the TUM School of Engineering and Design in the Technical University of Munich as of winter semester 2024/2025.

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1. Training Goal of Practical Work

¹Aerospace engineers work in various areas of research, development and in “Service and Operations“. They work in planning and management, supervise complex facilities, coordinate operations, including maintenance, and also carry out the associated commercial and sales tasks. ²A synthesis being formed between different disciplines and aspects is typical for this whole field. ³This should also take place in the industrial internship by students gaining knowledge and experience from the world of work that complements their engineering studies – not least also from workshops. ⁴This not only involves getting to know specific techniques and procedures, but also obtaining a practical insight into activities and fields of work.

⁵One further essential aspect lies in grasping the sociological side of matters. ⁶The interns also need to understand the company as a social structure and learn about the relationship between management and staff in order to correctly assess their own future position and potential impact – in many cases as supervisors.

⁷Overall the internship provides important experience for later positions of responsibility and is part of professional education and training.

2. Industrial Internship

The full industrial internship comprises a pre-study internship and a specialized internship.

2.1 Pre-Study Internship

¹The purpose of the pre-study internship is to teach basic knowledge of manufacturing technology that can also be obtained during internships at smaller companies. ²Knowledge of manufacturing technology is one requirement for understanding what is feasible and can be implemented in practice. ³Furthermore, knowledge from the pre-study internship contributes to understanding the lectures and exercises in the design subjects for the bachelor’s degree.

⁴As a rule, the pre-study internship is completed in industrial manufacturing, where students gain indispensable elementary knowledge. ⁵The interns should get to know the practical applications and gain an overview of the manufacturing facilities and processes under the instruction of specialist supervisors. ⁶The interns should also gain insight into quality assurance and auditing. ⁷The pre-study internship can, however, also be completed in one of the other relevant areas of the aerospace industry, such as in development or in service and operations areas.

2.2 Specialized Internship

¹The specialized internship should provide interns with general insights into their later careers, into technical/economic or organizational relationships or also into the significance of technology and engineering in our society. ²This part of the internship gives the interns themselves far-reaching freedom of choice according to their preferences and the opportunities available. ³Within the framework of the Bachelor’s Degree Program Aerospace, the specialized internship can be completed in at least six weeks in the 5th semester of enrollment in the degree program (Fachsemester) and is worth 8 credits. ⁴Alternatively, it is possible to complete a “project seminar” at the Chair, which also lasts six weeks and is worth 8 credits. ⁵In this case, the project seminar counts as a separate area.

3. Duration and Work Areas of the Industrial Internship

3.1 Duration

¹The industrial internship involves a mandatory pre-study internship lasting at least eight weeks that is followed by a specialized internship lasting at least six weeks. ²In the case of partial recognition of an internship, the training time at a company needs to consist of at least one continuous week. ³In order to cover one of the areas named in No. 3.2, four consecutive weeks need to be proven. ⁴The weekly working hours are based on the collectively agreed working hours in Germany.

3.2 Work Areas

¹The requirements for the whole industrial internship are met when internships have been completed in two of the three possible work areas:

- A). Manufacturing
- B). Development
- C). Service/operations

²An area is considered to be covered when at least four weeks of internship have been completed in one stretch.

3.3 Timeframe

The pre-study internship of least eight weeks should be completed before the degree program commences. The respective documents and proof need to be submitted to the internship office for Aerospace and Geodesy at the TUM School of Engineering and Design two weeks before the end of the second semester of enrollment in current degree program (Fachsemester).

4. Completion of Industrial Internships

4.1 Internship Plan

¹The pre-study and specialized internships do not differ in terms of required content. ²They can be completed both in manufacturing, in development, or in the area of service/operations.

³Typical activities that form part of the *pre-study internship* are work in:

- Manufacturing techniques like shaping or machining processes, joining and cutting processes, fitting, integration, and assembly
- Tasks in the area of auditing and quality assurance
- Work in investigation, development, design, calculation and testing of technical concepts, machines, components, materials, processes, and methods
- Manufacturing development and production planning
- Servicing and maintenance tasks

⁴In the *Specialized Internship*, tasks that complement or build on university studies are particularly recommended, e.g.:

- Project management tasks, i.e., planning, coordination, and technical/economic monitoring of project procedures
- Technical supervision and work on operation of complex facilities and systems
- Sales work and marketing of technical products
- Creation of complex technical offers
- Technically oriented company planning tasks
- Investigations on necessity, requirements, and impact of existing/planned technical systems or products with regard to environment and society.

⁵The named tasks are performed at medium-sized and large companies, and in some cases at authorities and organizations. ⁶In addition to a greater variety of tasks, work in different areas is preferable so students to get to know a range of department or company cultures. ⁷However, most of the tasks listed require a certain learning period which means a related internship of several weeks is often needed to make the work worthwhile.

⁸It normally only makes sense to go on the specialized internship after the fourth semester of enrollment in the degree program (Fachsemester).

⁹Regardless of the work areas chosen by the intern, they should gain an overview of the company's services and products as well as the technical/organizational classification of the departments visited during the internship. ¹⁰This should be set out in the internship report.

¹¹The specialized internship can be replaced partly or entirely with a pre-study internship as long as it complies with these regulations in terms of duration and distribution.

4.2 Report and Proof of Internship Achievements

¹Successful completion of the internship or parts of it is proven by:

1. A report signed by the student indicating which area A, B, or C the internship is assigned to. For the pre-study internship, this report should be three to four pages long (continuous text, work steps, sketches, special issues, ...). For the specialized internship, a description of the tasks performed [for the internship company](#) should be included (about five pages as a guide value), in addition to the product and organization descriptions named in 4.1 [for the internship company](#); the former can be omitted if, instead, the student can submit a technical report on their work during the internship period written for the internship supervisor,
2. a [corresponding internship certificate work reference](#) from the companies that indicates at least the [work-internship](#) period, the tasks performed, and the social conduct of the interns at the company,
3. and the [corresponding](#) internship certificate for the Bachelor's Degree Program Aerospace.

²The proof of the internship work is provided by submitting the documents listed above to the internship office (see 7. Recognition of Internship).

5. Interns at Companies

5.1 Training Companies

¹The knowledge of the manufacturing processes to be learned during the internship, the observation of the economic way of working, and gaining a feel for the social side of the work process should be preferably undertaken in industrial plants that are also recognized as training companies by the Chamber of Commerce and Industry. ²The internship can be taken at companies from the aerospace industry, mechanical engineering, or the automotive, electrical, and chemical sector, mining, German railways (Deutsche Bahn), and at larger handicraft companies, as long as all requirements for training according to these regulations are met. ³Work at schools, universities, and research institutions can be recognized as long as it complies with the regulations.

5.2 Supervision of Interns

¹As a rule, interns are supervised at the companies by contact persons who ensure appropriate supervision in accordance with the training possibilities of the company. ²They [explain specialist questions to interns also in conversations and discussions also advise interns on specialist questions](#).

³University student interns are not obliged to attend vocational schooling. ⁴Voluntary participation in lessons at the company training center should not detract from the already brief internship work.

6. Legal and Social Standing of Interns

6.1 Application for an Internship

1Before commencing the internship, future interns should familiarize themselves in detail with the provisions concerning the completion of the internship and the reports on internship activities by consulting these regulations or, in special cases, by contacting the internship office for the Department of Aerospace and Geodesy at the TUM School of Engineering and Design. 2Since internships cannot be assigned, the interns themselves have to contact the companies to ask for an internship placement. 3The internship office and the Aerospace and Geodesy student association can also provide help.

6.2 Internship Contract

1The internship relationship is made legally binding by the work contract concluded between the company and the interns. 2The contract sets out all the rights and obligations of the intern and the training company as well as the type and duration of the internship.

6.3 Funding for Practical Training

1The specialized internship and the pre-study internships are considered to be training in the tertiary education area and are therefore eligible for grants in accordance with the (German) Federal Law on Support in Education. 2The interns consult the corresponding authorities in their place of residence for the grant.

6.4 Insurance Requirements

The respective laws regulate questions related to insurance requirements.

6.5 Vacation, Sickness, and Absence

1Absence of more than three days during the internship shall be made up for. 2This includes working hours missed due to sickness, vacation, or other reasons. 3Company holidays also count as absent days. 4The only exception is formed by public holidays. 5In the case of downtime, the interns should request a contract extension from the company so they can complete the commenced training phase to the required level.

6If the interns provide a doctor's note stating that they are not fully able to perform the required activity due to a long-term or permanent physical disability or a chronic illness, the missing time can be compensated by working in design offices, work preparation, material testing, and laboratories after consulting the internship office.

7. Recognition of Internship

1The internship office for Aerospace and Geodesy at the TUM School of Engineering and Design checks whether the requirements for the industrial internship are met. 2This requires that the documents listed under 4.2 are submitted (digitally).

3The type and duration of the individual activity sections need to be clearly indicated in the documents.

⁴The internship office decides to what extent the practical activity complies with this guideline and can therefore be accepted as an internship. ⁵If the reports submitted for an internship are lacking in any way, the internship will not be accepted or will only be accepted for part of its duration, depending on the documents submitted. ⁶The internship office may request additional training weeks if internship certificates and reports do not prove sufficient performance of individual internship parts.

8. Special Provisions

8.1 Professional Training

¹Relevant professional activities that meet the requirements of these internship guidelines will be credited to the maximum 14-week duration of the internship. ²An apprenticeship is recognized to the extent that it complies with the internship guidelines.

8.2 Non-Industrial Internships

General Provisions

¹Internships in non-industrial fields require prior approval by the internship office. ²In addition, the total of all activities in a non-industrial sector may not exceed six weeks.

Internship for Conscripts in the German Armed Forces (Bundeswehr)

³It is the responsibility of the applicants to apply for a placement in a suitable technical unit before commencing their military service. ⁴After consultation with the internship office, training periods completed in the unit can be credited with a maximum of six weeks if activities are carried out in accordance with 3.2. of these regulations. ⁵The relevant reports and certificates (ATN and military service certificate) need to be submitted to the internship office for the purpose of recognition. ⁶The German Federal Minister of Defense issued a decree (see Ministerial Gazette of the Federal Minister of Defense 1963, p. 291, in the version dated 12.07.1967, VMBI 1967, p. 213) authorizing the keeping of internship reports and the issuing of internship certificates.

⁷In addition to those performing basic military service, this crediting rule also applies correspondingly to soldiers serving for longer periods (temporary soldiers) and to those performing civilian or alternative service.

8.3 Other Industrial Employment Relationships

¹Work as a student trainee or other gainful employment can be recognized as an internship as long as the internship guidelines are met.

²A ~~term paper~~final thesis written at a company cannot be recognized as an industrial internship, and vice versa. ³While the aim of an internship is to gain insight into a wide range of techniques and processes, ~~term paper~~the final thesis require students to work on specific technical/engineering tasks in greater depth and increasingly independently.

⁴If you are unsure whether a planned internship is compatible with these guidelines, you should seek advice from the internship office in advance.

8.4 Internships Abroad

¹Completing parts of the internship abroad will be advantageous in a future career. ²The prospective engineers not only improve their professional qualifications, but also gain an insight into the cultural, social, and economic structures of other countries. ³Students can therefore complete their industrial internship at suitable foreign companies, provided that the knowledge acquired there corresponds to the prescribed training plan. ⁴The reports should be written either in German, English, or bilingually (German plus local language). ⁵The internship certificate needs to be submitted in the respective official language along with a certified translation into German. ⁶English-language certificates are an exception to this. ⁷A translation is not required in this case. ⁸Durations of up to 14 weeks are recognized.

9. Inquiries

Questions and individual requests related to these regulations should be addressed to the internship office for Aerospace and Geodesy at the TUM School of Engineering and Design.

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