

INFORMATION FOR COMPANIES

# MINOR- INTERNSHIP

UTVU BSc MECHANICAL ENGINEERING



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## 1 INTRODUCTION

Practical training is essential to an engineering study to prepare for future jobs. Only through working experience students can link knowledge and skills from their education to real-life situations. Moreover working experience offers insights no book can offer better. Therefore, the BSc Bachelor's Mechanical Engineering (ME) programme has a great appreciation for design and research assignment companies offer or considers to offer.

In this document, we will focus on the Mechanical Engineering minor-internship, which is a **Design-oriented assignment**. In section 2 we discuss the benefits we see for companies in working with (couples of) students. In section 3 the Mechanical Engineering curriculum is explained. In Section 4 we will discuss what a minor-internship entails and how a minor-internship is planned. Section 5 learns about how your company can get involved in an internship and the expectations we have from your company guidance when providing a student with an assignment.

## 2 EMPLOYERS BENEFIT FROM WORKING WITH STUDENTS

The benefits for the employer involved in an internship are:

- The students involved are highly motivated, eager to learn, "high yield" employees whose enthusiasm can motivate present employees.
- Internships provide an effective and personal way to engage and connect with talent.
- Small- and medium-sized companies can make internships the basis for management development programs during and after bachelor graduation. Graduates who have interned with a company show the need for less job orientation and training, and progress faster and further than graduates who have not interned.
- It is a way of keeping up with new methods, theories, and concepts related to the employer's business area.
- It provides the opportunity to promote the company on campus through returning interns - goodwill ambassadors and "image builders".
- Closer and better relationships between the academic and work field can be developed.

## 3 CURRICULUM UTVU MECHANICAL ENGINEERING

Bachelor (BSc) of Mechanical Engineering at the University of Twente (UT) is an English taught three-year programme (180 European Credits [EC]). Since 1-9-2019 this programme is also offered in collaboration with the Vrije Universiteit in Amsterdam, the so-called BSc UTVU Mechanical Engineering (UTVU ME) programme. The latter programme runs most of the time in Amsterdam because of cooperation with the Vrije Universiteit van Amsterdam (VU) and students are for approximately 25% of their time in Enschede.

The first two year consists of courses with related tutored projects, while the third year mostly is reserved for students personal choices to broaden their horizon and/or increase their in-depth knowledge and skills with courses and internships. These choices consist of:

- a minor (the first semester of the third year for 30 EC)
- a bachelor graduation assignment in the second semester of the third year (for 12 EC).

In this document, we will focus on the minor, specific the minor-internship.

## 4 MINOR-INTERNSHIP

The Dutch Province Overijssel, the University of Twente - Faculty of Engineering Technology and companies co-invest in attracting highly skilled technical talent for companies in the region of Twente. This cooperation consists of several activities in the UTVU programme, such as guest lectures, excursions, project engagement etc. and minor-internships (15 EC as part of a 30 EC minor).

#### 4.1 What is a minor internship

A minor-internship is an educational **Design related assignment**, in cooperation with a company and a related programme department (for topic related academic supervision), specifically aimed at allowing the student (or preferably a couple of students) to become acquainted with one particular company or institute and experience what it is like to be working in a company setting as part of a team of professionals. The main objective of the internship is to put acquired knowledge and skills into practice in a real professional engineering environment. Minor internship assignments need approval from a programme related department and will be supervised by a company supervisor (coach from the company). Areas, where the students are familiar with at the moment the minor internship is scheduled, are Manufacturing, Energy Transition & Sustainability, Maintenance and Technology for Healthcare.

We expect that the skills/knowledge the student learns during your internship is transferable to other employment settings and the internship assignment has a defined beginning and end and an assignment description with clearly defined learning objectives/goals related to the professional goals of the academic coursework. The student needs to work under the guidance of a company supervisor and finalizes the internship with a final report including a reflection.

#### 4.2 Learning objectives of the minor-internship

The learning objectives are:

- to become acquainted with the field of Mechanical Engineering in practice
- to apply the acquired (design) knowledge and skills in a practical situation
- to work on a **Design related assignment** under company supervision
- to become acquainted with real-life problem solving
- to further develop social and communicative skills
- to help carry out (part of) a (re-)design project which is useful for the employer and relates to the field of research from one of the ME department

#### 4.3 Planning a minor-internship

The total minor is 30 credits (20 weeks from September until the end of January) of which the minor internship is part (15 EC). In the latter the student can work on a company **Design oriented assignment** for **10 weeks** (= 420 hours workload, including writing the final report including a reflection). In the other 10 weeks, the student has to join minor courses. When and how much time the student will be spending in the company is negotiable.

Because the programme is a cooperation with the University of Twente (UT) and the Vrije Universiteit in Amsterdam (VU) we have separate schedules for the minor-internship depending on the location of the internship company and the students' choices.

Depending on the location of your company the student will have to complete his/her 30 EC minor with UT or VU minor courses. An internship in the Region Enschede can be finished in consecutive weeks. An internship in the Region Amsterdam will be stretched over blocks due to the VU schedule. The student has to puzzle how to plan the internship and the minor courses. The time spends at your company will be discussed with you. Below you see the minor internship schedule per University.

Semester 5: minor with internship							
Amsterdam	block 1	block 2	block 3		Twente	Q1	Q2
	8 weeks	8 weeks	4 weeks			10 weeks	10 weeks
Internship (15 EC)	12		3		Internship (15 EC)	15	
VU Reflection Course (3 EC) mandatory with intership			3		minor module (15EC)		15
Courses (2x6 EC)		12					
Internship (15 EC)		12	3		Internship (15 EC)		15
VU Reflection Course (3 EC) mandatory with intership			3		minor module (15EC)	15	
VU Courses (2x6 EC)	12						

*Minor internship schedule per University*

### Extra entry requirements:

Before starting the minor-internship the student must meet the general entry requirements set by the BSc UTVU ME programme (finalized at least: 90 credits - one and a half year of courses) and the design-oriented assignment must have been approved by an ME department related to the programme. Only when both requirements are fulfilled the student is allowed to start the internship.

#### 4.4 Grading

The final assessment and grading will be done by a staff member of the involved ME-department, the so-called internal supervisor with an advisory role for the company supervisor. The final grade for the minor internship is determined by the weighted average of the grades for:

- The report (40%), given by the internal supervisor
- The content of the work carried out for the assignment (45%), given by the internal supervisor and advised by the company supervisor
- The work process during the assignment (15%), given by the internal supervisor and company supervisor

All grades have to be higher than 5.5. One grade between 5.0 and 5.5 is allowed but the weighted average should be higher than or equal to 5.5. See also Section 6 and 7: appendix,

## 5 ORGANIZATION

For doing an internship we expect the student to:

1. Be interested in understanding how organizations and teams work
2. Be able to plan the internship and minor courses effectively
3. Like working in a (global and multicultural) organization and teams
4. Have a drive for results
5. Have the desire to co-create with colleagues

### 5.1 Companies involvement

If your company has a design-oriented question and is eager to benefit from working with one or more students, you can offer your assignment to our departments for cooperation on a minor-internship.

The premise is that the assignment should :

- relate to topics of Mechanical Engineering department
- relate to the classroom topics Manufacturing, Energy Transition & Sustainability, Maintenance or Technology for Healthcare
- can be executed by BSc undergraduate ME student(s) – each 420 hours workload
- be executed in 10 weeks

Because students can choose to apply for the assignment we can not guarantee execution.

### 5.2 Registration for an internship assignment

Registration for a specific internship assignment can be done on the Company-U website, [UT-VU Internship | Company-U \(utwente.nl\)](https://www.utwente.nl/ut-vu-internship) via the minor internship form. The Company-U coordinator will discuss your assignment offer with a staff member of the programme and inform you about the outcome and how to proceed. If your assignment is approved it will be published to the students who can register for the assignment. Via the Company-U coordinator, you will be notified about students registration. Students will mail a job application to you and via job interviews, the company will decide on admission to the internship.

### 5.3 Supervision

During the internship, a member of the academic staff (internal supervisor) will supervise the student concerning the academic level of the assignment. During students' stay in the company, it is expected

that he/she will be introduced into the organization in the same way as a new colleague. One of the companies staff members must act as a company supervisor, for guidance on progress at least once a week. Furthermore, we expect that the company supervisor will comment on the concept report and he/she and the student will have a final meeting to finish the assignment formally. The company supervisor can be asked by the internal supervisor for advice on the assignment grading. The company supervisor fills out an evaluation form (to be delivered by the student) as the student also does at the end of the internship.

#### 5.4 Tasks company supervisor

- Writing half A4 design-oriented assignment description.
- Realize that total assignment is 15 EC, including writing the report with reflection.
- Reading and commenting midterm versions of the report.
- Giving feedback on students' work.
- Being an advisor to the ME staff member (internal supervisor).
- Supervising the student.
- Filling-out an evaluation form and discussing the outcomes with the student
- Be aware that the assignment ends and has to be graded in the last week of the agreed time-slot. So, no result is also a result if motivated very well.

#### 5.5 Reward and insurance

It is desired that the assignment will not result in any extra costs for the student. The university requests that the organization will at least compensate for the travelling and accommodation costs. This is often realized by an internship allowance. But, your organization is not obligated to provide a fixed salary. Insurance is partly covered by a University agreement. We recommend your organization to address issues like allowance, insurance, working hours etc. in an agreement with the student. We provide a format for the student to identify arrangements for these aspects.

#### 5.6 Report and confidentiality

The student is asked to write a report of approximately 20 pages on the assignment. At the end of the internship, the report should be finished. Like any other official document related to or produced by the student, a digital copy of the report will be archived and added to the student's file. This is done in particular for three reasons:

- providing information about past internships to students who are currently looking for an internship
- quality assurance of the internship as part of the curriculum
- the comprehensiveness of the student's archive

## Appendix 1: Assessment forms

### Assessment form for **company supervisors**

<b>PART A: INTERNSHIP PRODUCT AND/OR INTERNSHIP REPORT</b>	Comments/feedback
The internship product fulfils the requirements of the assignment.	
The report should display the problem and its context well. It should explore/describe possible solution routes and underpin the one selected. It should describe and underpin the solution in a way that is valuable for future use.	
Total mark *	
<b>PART B: PROFESSIONAL BEHAVIOUR</b>	Comments/feedback
The trainee communicated clear and transparent.	
The trainee professionally worked on the task (punctuality, coping with feedback, collegiality, taking initiative, etc.)	
The trainee can work with a team of engineers in a corporate environment whenever was necessary/required for the task	
The trainee can deal with problems and limitations of professional practice and is able to adjust the process in the event of any stagnation	
Total mark *	
<b>ADDITIONAL QUESTIONS</b>	Comments/feedback
Would you be interested to supervise other students from the University of Twente or the BSc UTVU ME programme in the future?	
If yes, may we give your name and e-mail address to an interested student, or should the student approach your company/institution in a different way?	
Do you have the feeling that certain aspects were missing in our student's education, which you would consider essential for an engineer in these fields?	
<b>ADDITIONAL REMARKS/FEEDBACK</b>	
What compliment and/or advice would you give this trainee for the future?	

The total mark can be selected from: Unsatisfactory - adequate - more than adequate - good - very good – excellent

### An assessment form the **internal supervisor**

<b>PART 1: INTERNSHIP PRODUCT AND INTERNSHIP REPORT</b>	Comments/feedback
The internship product(s) makes a useful contribution to a (partial) solution to the problem posed.	
Relevant key concepts and theories have been described.	
New knowledge and skills have been identified and acquired.	
The report's content is logical and consistent	
Total mark *	
<b>PART 2: REFLECTION</b>	Comments/feedback
The trainee described as personal learning goals (as formulated in the internship plan) at least one relevant learning moment whereby attention was given to the own behaviour and role, and the behaviour and role of the other person and the context of the internship.	
Attention was given to future professional development in the form of formulation of new learning goals	
Total mark*	
<b>ADDITIONAL REMARKS/FEEDBACK</b>	
What compliment and/or advice would you give this trainee for the future (for example the graduation assignment or the future in general)	
<b>FINAL ASSESSMENT</b> Step 1. Count component A + component B from company supervisor/2. This is the company mark. Step 2. Count components 1 + 2 + company mark / 3 (rounded to a whole mark)	

The total mark can be selected from: 5 - 6 - 7 - 8 - 9 – 10

## Appendix 2: Report

### Content of the report

The report is about 20 pages (excluding cover, summary, table of contents and appendices) and has to be written in English.

The report comprises the following components:

- Cover sheet (title, name, student number, degree programme, date, internship organization, duration of internship + EC, names of the internal and company supervisors, mention in a frame if the report is confidential).
- Table of contents
- Summary; a short description of the internship project and its results, about half an A4.
- Introduction; develop and describe the exact problem.
- The essence of the report: In the core of the report the technical/scientific content of the assignment is described: what was carried out, what are the results, conclusions and recommendations. The following structure is used as a guideline:
  - o Definition of the problem
  - o Work plan/research/design method used
  - o Analysis/research results
  - o Discussion of the results
  - o Conclusions
  - o Recommendations
- References
- Appendices (such as 'reflection')

### Reflection

The reflection is an appendix of the Report.

The individual reflection, (about 2/3 pages) contains at least the following components:

- o Reflection on the internship learning objectives that were proposed: systematically describe and analyse for each learning objective at least one relevant learning moment using the STARL method (see appendix for more information)
- o Analysis of company internship supervisor's feedback on professional behaviour; an analysis of the feedback on functioning and professional behaviour and indicating how this correlates with the student's characteristics and development.
- o The future; formulating new SMART learning objectives for further professional development.

### What is reflection?

Reflection means that you look into the mirror to become well aware of how you operate, which choices you make, which skills you use and how that feels. After realizing this, you can form an opinion about the result of your actions: is it in accordance with your original goals and what do you think about the results? As a final step, you can state your intentions about what you are going to do (different) in the future. Very often this looking back on your actions and the result of that action leads to different actions in the future. Reflection is thus, in a way, a means to overcome the next pitfall.

### How to build up your reflection report?

Start with a description of your learning objectives so your supervisor knows what you wanted to reach. The next step is to reflect on each learning objective with at least one situation. Describe this situation. For the description of the situation, please use the STARL method. Besides a reflection on your tasks and learning objectives you also have to reflect on the feedback of your company internship supervisor. How does this correlate with your characteristics and development and what do you get out of this for the future?

End your reflection by formulating new SMART learning objectives for further professional development. SMART stands for Specific, Measurable, Achievable, Realistic and Time-bound.

### Description of the STARL method

The STARL method is a commonly used model for reflection. In your reflection report, you base your reflection on your formulated learning objectives and reflect on them.



<b>S</b>	<b>Situation</b>	Situation is where you had the experiences. Describe the environment, the type of people or equipment you worked with. This gives the reader the background information and puts the experience into context.
<b>T</b>	<b>Task</b>	Describe the challenge and expectations. What needed to be done and why?
<b>A</b>	<b>Action</b>	When addressing action, think about what you did to resolve the problem or perform the task. Ask yourself, what did I actually do?
<b>R</b>	<b>Result/reflect</b>	Think about how your actions affected the outcome of the situation and the status of the task. How do you know that what you did made a difference (or not)? Or the focus may be more on reflecting on what you have seen or done. Reflect on the experience to identify what has happened, what you have realized or what needs further investigation or thought.
<b>L</b>	<b>Learning</b>	Highlight the skills that came out of the process and how they can be applied elsewhere. This will show your growth and development as well as the skills you possess. Or the focus may be more on your planning. What would you like to develop in the future?