

Concerning the start of the internship

The internship project has to be executed in a research institute, university group or company on a topic relevant for Fusion energy development in the broader sense. It is stimulated to do this internship abroad. The student can start the internship only after:

- The summaries of two 'competence development interviews*' have been submitted to the program administration.
- The project has been approved by the academic supervisor.
- The Study Program Form (SPF) part A and B, approved by the Study Program Committee and the academic supervisor of the internship, has been submitted to the program administration.

The Study Program Form (SPF) can be found on the Education Guide.

Concerning the duration and finalization:

Before the start of the project, the academic supervisor and the student agree on an end date, using as a general rule that a 15 credits internship corresponds to 10 weeks of full time equivalent effort. This end date is filled out on the SPF. It is the express intention that the project, including the submission of the final report and the final presentation, is completed by this end date.

Should the student not succeed in making this deadline, the following rules apply:

- At the latest 4 weeks after the agreed end date the student must submit the final report and give the final presentation. If the student also fails to meet this extended deadline, this will disqualify the internship. In that case the student must do another internship.
- The student can ask for an extension of this 4-week period only by electronic request to the Examination Committee, explaining why the delay is beyond their control. This request must be filed at least 1 week before the end of the 4-week period.

The final grade will only be entered in the administration after the final internship report has been received electronically by the administration.

* In the Fusion Master, every student has competence development interviews, i.e. interviews with a staff member in which the development of the student with regard to the academic competences as defined in the ACQA framework is reviewed. In principle these are held after every quartile in the first year.

1. EDUCATIONAL GOALS

The internship is primarily meant as an introduction to the professional environment and to get experience with state-of-the-art fusion research or technology. It needs to be carried out in a company, university or research institute, with a link to the field of fusion. The student will work on a project with a goal, a plan, and a beginning and an end. The project plan will be written by the student, in close collaboration with the local supervisor. The execution of the project will in general call for work as member of a team. It is important that the students (learn to) stick to the planning, or rather, learn to do what is necessary to realise the project goals according to the plan. Therefore, there is a strict time limit, set in the Examination Regulations within which the project, including the reporting, must be concluded.

Unlike the graduation project, the internship does not have to entail original, independent, scientific research or design. It is not a mini-graduation project, its educational goals (see below) are essentially different. It is of course not forbidden to do scientific work, there have been several instances of students who concluded their internship with a publication. Whether that is an option depends on the host institution and the project definition. But it is not a goal or requirement.

Many of the fusion students do an internship abroad, the field offers ample opportunity for that. It is not a requirement though. The requirement on international experience is that every student should spend at least 3 months abroad, either in the internship or in the graduation project.

2. THE LEARNING GOALS OF THE INTERNSHIP ARE:

1. To gain experience with scientific/technical work in a professional, not necessarily academic environment. This may be in a fusion research institute, a university fusion research group or industry related to fusion energy development. The experience to be gained includes:
 - The writing of a project plan, including a time schedule
 - Adherence to the planning with good time management and goal-oriented work.
 - Development of the ability (analytic skills, initiative, creativity and dedication) to carry out a project of good quality, as member of a team and/or independently.
2. To develop the ability to write a clear report on the results of the project (see ### for instructions on how to write a good report)
3. To develop the ability to give a clear oral presentation of the work, that conveys the essence of the project, is well-structured, has presentation materials of good quality, and is well timed and executed (see the FUSION CANVAS page for instructions on how to give a good talk).

3. ASSESSMENT CRITERIA INTERNSHIP MSC. FUSION

Specification of grades:

General remark: the assessment should be based on the performance of the student in the company or in the international research group where the internship has taken place. This performance is measured according to the rubric given below. This rubric specifies the items in the assessment, and for each item, the minimum level that should be achieved at the end of the internship as well as the level for which the student fully complies with the learning goals.

5. (or less): Insufficient: the student does not meet the minimum criteria for most of the assessment items in the rubric.
6. Sufficient: performance that meets the minimum requirements (as given in the rubric)
7. More than sufficient: performance at the level of or above satisfactory work
8. Good - performance of high quality, appropriate for a student who independently can conduct a project assignment, the student has reached all learning goals to a good level, but for some there is still some room for some improvement
9. Very good - outstanding performance: the student complies with all learning goals to a high level.
10. Excellent - a unique performance which seldom occurs: the student fully complies with all learning goals on the items as specified in the rubric.

ASSESSMENT RUBRIC:

Based on the learning outcomes a rubric has been developed, that will guide in the assessment.

Criteria taken into account in the rubric (related to the learning goals):

- Project execution:
 - Quality of the project plan and time schedule
 - Adherence to the planning, goal orientation
 - Reliability (does the student deliver, keeps to agreement)
 - Analytical skills
 - Dedication and Persistence
 - Critical attitude & independence
 - Collaborative skills
 - Initiative and self-propelledness
- Report:
 - Information in the report
 - Structure of the report
 - Completeness of the report
 - Use of Figures
 - Conciseness

- Presentation:
 - Structure
 - Scientific argumentation
 - Performance and delivery
 - Adequate introduction
 - Balance of content
 - Selection of results
 - Handling of questions
 - Timing of presentation

Small version of rubric* (large, and readable version in separate file)

		Items considered	6 (sufficient)	10 (excellent)
1. Report	Reporting Quality	* information in report: what is done, why is it done, how is it done. What is result?	* The report should at least have a motivation, research question (or design goal) describe the method, give results and ends with a conclusion	* The report tells the reader exactly what was done, why it was done, how it was done, and what the result was
		* Structure of the report	* The basic structure has as minimum component the items listed below	* Overall structure of the report is adequate and logical.
		* Completeness of report: does it contain the following parts: Abstract, Introduction, theory (when applicable, method/experiment, results, interpretation, summary and discussion, conclusion	<ul style="list-style-type: none"> o Introduction: Background, Motivation, statement of the problem o Summary of theory or background knowledge used in the rest of the report o Description of Method/Experiment o Results o Summary, Discussion, Conclusion 	<ul style="list-style-type: none"> o Abstract: informative and concise on aim and results o Introduction: Background, Motivation, statement of the problem, breakdown of the problem, clear description of the approach. Adequate review of relevant literature o Theory (when applicable): describing existing knowledge and building further on that o Method/Experiment: clear description fo experiments or methods, including the motivation what is to be learned form each experiment o Results: clear presentation of results o Interpretation: description and discussion of what can be learned from the results o Summary and Discussion (if applicable: application potential?) o Conclusion: relate back to the research question/problem
		* Use of Figures	* Use of figures : contain the main results/information and have caption	* Use of figures – adequate, to the point, well chosen
		* Conciseness	* Conciseness: all information that is relevant is present	* Conciseness: not too much, not too little, only relevant information
2. Presentation		* Clarity and structure	* logical structure: problem definition, method, results, conclusion	* Overall clarity, clear story line, logical structure
		* Performance, delivery of the presentation	* Attention of the audience is kept for the main part of the talk, language & voice are sufficient for understanding.	* Keeps full attention of the audience, good use of language and strong performance
		* scientific argumentation	* no inconsistencies in argumentation	* Convincing scientific argumentation, leading to conclusions that are supported by the evidence presented
		* Adequate introduction	* in introduction motivation and problem definition is addressed	* Adequate introduction, i.e. not too short but efficiently getting to the point
		* Balance between introduction, exposition of the work itself, conclusions, and discussion/reflection.	* introduction, resutls, conclusion and discussion are all addressed	* Good balance between introduction, exposition of the work itself, conclusions, and discussion/reflection.
		* Selection of the results	* present results relevant for problem	* Good selection of the essential results that underpin the conclusions
		* Handling of the questions in the discussion	* student is able to answer question directly related to his own work, on how he has done it.	* Handling of the questions in the discussion
		* Timing of the presentation	* Within 20 % of the allocated time	* Within the time constraints
3. Execution of the work	Project management	* Quality of project plan and time schedule	* the task given to the student is converted into a project plan, containing the main aspects and time schedule.	* the student defines a clear project plan , with milestones and deliverables, with a managable and relalistic time schedule
		* Adherence to the planning	* Planning is not delayed more than 25 %, project managementis done in collaboration with supervisor	* Good project management: project finished on time, no delays
		* Reliability (i.e. whether the student delivers something if promised, and timely)	* the student delivers if promised, but needs to be remembered several times.	* Reliable, i.e the student delivers if promised, and timely
	Ability to cary out a project	* analytic skills	* the student makes some analysis of the problem first before acting.	* the student has an analytic approach to unravel the problem at hand, works in a stuctured way.
		* dedication, persistence	* the student is able to finish the project	* the student is highly motivated, puts a lot of effort in the project, is able to finish it in a decent manner, inrespective of setbacks.
		* critical attitude; Independence	* the student has a critical attitude towards its own results	* (Justified) critical attitude to literature and own results; Independence in the formation of scientific ideas.
		* Collaborative skills/ when appropriate: ability to work in a team	* the student does his part in the team, but will not initiate collaborations him/herself, not active to promote teamwork, but does also not frustrate teamwork	* Good collaborative skills, teamplayer
		* Initiative, self-propelledness	* demonstrated some initiative, needs sometimes help but can also work individually, modest but steady learning curve	* demonstrated lots of initiative, is self-propelled, steep learning curve.

* ≤ 5 = fail, 6 = sufficient, 7 = satisfactory, 8 = good, 9 = very good, 10 = excellent

4. ASSESSMENT PROTOCOL INTERNSHIP - MSc SCIENCE AND TECHNOLOGY OF NUCLEAR FUSION

- The following components are taken into account in the assessment of the internship: 1) the report (1/3), 2) the presentation (1/3), and 3) the execution of the work itself (1/3). Individual grades for these three components as well as the final grade must be noted on the *internship assessment form MSc. Science and Technology of Nuclear Fusion*. This form and the criteria for assessing the three components are included in this document. The completed assessment form is sent to the Examination Board.
- The assessment must be done in whole or half-marks by the authorized examiner (academic supervisor) who is responsible for the project, advised by the daily (possibly external) supervisor. The responsible examiner must have informed the daily supervisor in writing of the assessment procedure and the supervisor's advice must, as far as possible, also include an assessment of the above three components.
- The authorized examiner will consult a second member of the fusion scientific staff, and motivate to him/her the assessment, including the advice of the daily supervisor. After this consultation with the second person the final grade will be determined, and the motivation is written down in the final assessment report.
- The final grade is determined in whole or half digits on the rounded average of the three partial grades, with a possible choice between rounding up or down (if the non-rounded average is "N, 25" or "N, 75") is determined by the partial mark for the execution of the work itself.
- For the assessment, the student must submit a report of the project and give a presentation of 12 minutes, with an additional 5-10 minutes for discussion.
- The student has passed if the final mark is 6 or higher and the marks for the report (part 1) and for the execution of the work itself (part 3) have been assessed with at least a 6. If the final mark is 6 or higher, but these last conditions are not met, the result will be "insufficient" (ONV) and the student will not pass.
- If the student does not pass, this will be reported to the education administration. In that case, the student is given the opportunity to submit a revised report and / or give a new nomination within a strict period (to be agreed with the responsible lecturer), after which a new assessment follows. If this again does not lead to a satisfactory assessment, the student will have to do a completely new external internship.
- The student has the right to inspect the assessment form. If the student objects to the assessment or wants to appeal against a decision of the Examination Board, he/she can make use of the right to appeal as described in Article 8.1 of the OER.

INTERNSHIP ASSESSMENT FORM

MSC SCIENCE AND TECHNOLOGY OF NUCLEAR FUSION

Responsible Department: Applied Physics and Science Education

Name student _____
Student ID number _____
Date assessment _____
Group _____
Academic supervisor _____
Daily supervisor _____
Second examiner _____
Company/institution _____
Title internship report _____
Course code _____

Plagiarism check on report has been conducted:

Grading Internship	1) Report	
	2) Presentation	
	3) Execution of the research	
	Final grade	

Short motivation of the assessment

Background:

Assessment

Report:

Presentation:

Execution of the research:

Signature academic supervisor