

Study Guide

Master of Science in Nuclear Engineering

According to study regulation 2014

03.11.2014

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1 Introduction

The ETH Zurich, in conjunction with the EPF Lausanne, has offered a specialized Master's program in Nuclear Engineering since 2008. The Master's degree program in NE is primarily concerned with the process and technology of energy conversion in nuclear power stations, including the associated processes of the fuel cycle from fissile material extraction to waste management. Subjects in the areas of energetic utilisation of nuclear fusion and non-energetic uses of radiation in medicine and industry complement the program. The theme of the potential role of nuclear energy in future sustainable power supplies is also addressed.

The joint providers of the Master's degree program in Nuclear Engineering are the Department of Mechanical and Process Engineering (D-MAVT) at ETH Zurich and the Section of Physics (SPH) at EPF Lausanne. In addition to the usual D-MAVT and SPH bodies, a 'Core Group' oversees the academic matters pertaining to the degree program. The Paul Scherrer Institute (PSI) contributes to the program by offering supervision and scientific infrastructure for semester and Master projects as well as by providing additional academic lecturers. Other institutions and research groups involved in the Master's program are the Energy Science Center (ESC) at ETH Zurich and the Energy Center (CEN) at EPF Lausanne. The program gets financial support from the Competence Center Energy and Mobility (CCEM-CH) of ETH-Domain and swissnuclear, the nuclear energy section of Swisselectric.

This Master's study guide provides detailed information relating to the "Program Regulations 2014 of the Joint Master's degree program in Nuclear Engineering – Department of Mechanical and Process Engineering" RSETHZ324.1.0300.32, in German, translated in English (the original German version is the legally binding document).

Zurich, September 2014

1. Master's Program

The Master's program prepares students for the diversity found at the frontiers of research and industrial development in the field of nuclear technology.

The overall objectives of the Master's program in Nuclear Engineering are to:

- 1) Provide in-depth knowledge on the fundamentals and technology of harnessing nuclear fission for energy supply.
- 2) Present the basic principles and challenges of controlled nuclear fusion.
- 3) Provide knowledge of nuclear techniques in medicine and industry.
- 4) Provide a view of the complete nuclear energy conversion system and the entire fuel cycle from uranium mining to the back-end.
- 5) Offer the background necessary to integrate nuclear energy into energy systems as a whole.

The Master's program in Nuclear Engineering follows the main structure of specialized Master programs offered at ETH Zurich and at EPF Lausanne. As a result of the multidisciplinary character of the subject and because it involves teaching by both federal schools, the curriculum is planned to cover 2 years (120 credits).

The program always begins in autumn. Entry at the beginning of the Spring Semester requires the permission of the admission committee and is normally only possible for students whose admission is subject to the completion of additional study achievements (additional requirements) to compensate for missing knowledge.

1.1 Tutor System

The Master in Nuclear Engineering is a tutor-driven program. When applying for the Master's degree program students must indicate at least one choice of tutor, who should be selected according to the topic of focus in the student's chosen core subjects. The tutor will be specified in the admission letter.

Professors of the Nuclear Engineering Core Group, who are involved in teaching and research related to one or more aspects of nuclear energy, including its complementarity and synergy with other energy systems, are authorized to act as tutors; see:

→ www.master-nuclear.ethz.ch/tutors.html

The agreement between the Master tutor and the student which defines the Master curriculum (in the following text referred to as the Tutor Agreement and shown in Annex 6.1) must be submitted to the D-MAVT Student Administration.

The tutor can be changed if there are cogent reasons requiring this. The Core Group of the Department of Mechanical and Process Engineering must approve any such change. The following conditions apply when there is a change of tutor:

- A change is generally only possible at the beginning of a semester
- A change does not result in an extension of the maximum allowable study duration
- In the case of disagreement between the Core Group and the student, the Director of Studies will make the final decision.

1.2 Curriculum Structure

The student workload required to achieve the objectives of the program is measured in credit points, according to the European Credit Transfer and Accumulation System (ECTS). A minimum of 120 credits is required for the Master's degree, including 62 credits from the core courses and 30 credits from the Master's thesis.

Tutors help define a curriculum for each student, structured in the following categories. In every category a given number of credit points must be gained.

Core Courses	62 credits
Elective Courses	12 credits
Semester project	8 credits
Industrial Internship	8 credits
Master's thesis	30 credits

The first (autumn) semester of the Master in Nuclear Engineering takes place at EPF Lausanne. The second (spring) semester takes place at ETH Zurich. Courses in both semesters are organized on a weekly basis. The third semester is dedicated to the Industrial Internship, the Semester project and compulsory Core Courses are organized as lecture blocks at PSI in Villigen.

The Master's thesis in the fourth semester is carried out at a lab of the PSI or at EPF Lausanne or at ETH Zurich.

1.2.1 Core Courses

The Core Courses lay the foundation of the Master's program in providing students with core knowledge according to the program's goals and the qualification profile. Core courses are described in the course catalogue, with an indication as to whether they are compulsory courses. The tutor, in consultation with the student, determines an individual curriculum which includes all the core subjects compulsory for students of the program. This curriculum should guarantee a solid, varied educational foundation and at the same time take into account the student's talents and expectations. The tutor also supervises the student during the entire Master's degree program, keeping track of his/her progress and providing guidance when necessary.

→ www.course-catalogue.ethz.ch

In the case of an unsatisfactory performance, the performance assessment may be repeated once. If the second performance is unsatisfactory as well, the course is failed definitively. This results in the exclusion from the program.

1.2.2 Elective Courses

The electives can either serve to add depth to scientific and technical knowledge related to the chosen specialization, or to add breadth to the range of skills in other disciplines, such as economics, management or the humanities. The courses may be selected from among the complete course catalogue of the master's level of ETH Zurich and the EPF Lausanne. At least 4 credit points must be obtained from courses from the section of humanities or, respectively, from entrepreneurship and technology management.

1.2.3 Semester Project

In the Semester project students, deploying the knowledge and competences acquired in the first two semesters, gain their first experience of research and development in the nuclear engineering field. It is generally undertaken in the third semester.

The supervisor of the Semester project is always a professor from ETH Zurich or EPF Lausanne and if the tutor approves, the Semester project can be completed under the supervision of another ETH professor, with the same requirements (included in the Tutor Agreement).

The supervisor proposes the subject of the project, elaborates the project plan, defines the roadmap together with their students and monitors the overall execution if the project is carried out in another lab. Dates for completion of the project and the criteria for assessment are set by the supervisor. The supervisor assesses the project with a grade.

The project is realized in 240 hours and concludes with a written report and a presentation. 8 ECTS are awarded for successful completion. If the Semester project is not passed, a new topic must be defined.

It is necessary to include the Semester project in the registration in myStudies in order to receive the credit points.

Successfully completing the Semester project is a pre-condition for embarking upon the Master's research project. If the student does not pass the Semester Project, it can be repeated only once. A new topic must be defined. The repetition can be completed under the supervision of another ETH professor. If the second performance is unsatisfactory as well, the course is failed definitively. This results in the exclusion from the program. A passed Semester Project cannot be repeated.

Prevention of Plagiarism

To ensure the intellectual property a signed Declaration of Originality is a compulsory component of every Bachelor's/Master's thesis, semester paper or other qualifying paper written during the course of studies.

Further information and required documents are provided on the ETH webpage:

www.ethz.ch/en/studies/legal-principles-degrees/performance-assessments/plagiarism.html

1.2.4 Industrial Internship

The aim of the internship is to bring the student into contact with the professional work environment in the industry. During this period, the student will have the opportunity to be involved in ongoing projects at the host institution.

The internship is com

pulsory. The internship must be at least 12 weeks long and can be carried out during the third semester.

Ideally, students complete an industrial internship in one of the nuclear utilities in Switzerland, in ZWILAG or NAGRA. Alternatively, the industrial internship can be carried out in a foreign industrial company. Students may organize their internship independently, or they can ask the tutors for advice and support. The tutors will help the students to establish the contact with the industrial enterprise and discuss tasks, the work plan and results.

8 Credits for a completed industry internship are awarded if:

- a. The student delivers a confirmation of the completed internship, issued and signed by the respective company.
- b. The tutor approves the internship
- c. The student submits (also by regular mail) the documents to the D-MAVT Internship Services.

Internship Services

LEE K 208

Leonhardstrasse 21

8092 Zürich

E-Mail: praktikantendienst@mavt.ethz.ch

It is necessary to include the Industrial Internship in the registration in myStudies in order to receive the credit points.

1.2.5 Master's Thesis

The Master's thesis completes the Master's program in Nuclear Engineering. With the Master's thesis, students demonstrate their ability to carry out independent and scientifically structured work in the area of nuclear engineering.

The supervisor of the Master's thesis is always a professor from ETH Zurich or EPF Lausanne. The Master's thesis is either closely related to the research activity of the

professor or deals with a challenging theme faced by industry. If the tutor approves it, the Master's thesis can be completed under the supervision of another ETH professor, with the same requirements (included in the Tutor Agreement). The supervisor is responsible for monitoring the structure and quality of the thesis. The Paul Scherrer Institute (PSI) in Villigen offers students the possibility to conduct thesis work in the laboratory of their Nuclear Energy and Safety (NES) unit. If the Master's thesis is completed at PSI its research work will be directly overseen by a PSI staff scientist. Full responsibility, however, always remains with the Master's thesis supervisor.

In order to start the Master's thesis, students must:

- have obtained a Bachelor's degree;
- have fulfilled all specified admission conditions;
- have acquired at least 72 ECTS in core and elective courses and 8 ECTS corresponding to the semester project

In general, the Master's thesis is pursued in one of the research laboratories of the Nuclear Energy and Safety Department (NES) at PSI, the ETH Domain's research institute and Switzerland's main player in nuclear (fission) energy-related R&D. Alternatively, Master projects can be undertaken in the Laboratory of Nuclear Energy Systems at ETH Zurich or in the Laboratory of Reactor Physics and Systems Behavior at EPFL.

The supervisor of the Master's thesis is a professor at ETH Zurich or Lausanne or a senior scientist at NES Nuclear Energy and Safety Department, under academic mentorship of the responsible professor, who proposes the subject of the Master's thesis, dates for completion and the criteria for assessment, and defines the roadmap together with the student. Deadlines for the submission of the Master's thesis are harmonized with EPF Lausanne.

The Master's thesis involves a workload of 30 ECTS (maximal 25 weeks full-time workload). The Director of studies may approve an extension of the duration of the Master's

thesis under special circumstances and at the request of the supervisor. Credits and a grade are assigned upon successful presentation of the Master's thesis and an oral presentation of the results.

If a Master's thesis is not successfully completed, a new topic must be defined and can be carried out with the same supervisor or with another professor. If the second performance is unsatisfactory as well, the course is failed definitively. This results in the exclusion from the program.

To carry out the Master's thesis in the industry, the approval of the tutor is required. Any form of remuneration may not be agreed upon by students or institutions of ETH Zurich with third parties. Expenses, however, may be paid by third parties.

→ www.ethz.ch/content/dam/ethz/common/docs/weisungssammlung/files-de/bezahlung-schriftl-arbeiten-dritte.pdf

If secrecy between ETH Zurich and the industrial partner is required, it has to be specified in an arrangement between the responsible professor and the company. The ownership of the property laws have to be regulated for each particular case.

→ www.share.ethz.ch/sites/rechtssammlung/Rechtssammlung/Forms/AllItems.aspx

Prevention of Plagiarism

To ensure the intellectual property a signed Declaration of Originality is a compulsory component of every Bachelor's/Master's thesis, semester paper or other qualifying paper written during the course of studies.

Further information and required documents are provided on the ETH webpage:

www.ethz.ch/en/studies/legal-principles-degrees/performance-assessments/plagiarism.html

1.3 Master's degree

To request the Master's degree the following prerequisites must be completed:

- All credit points from the five categories have been obtained.
- The list of Core Courses corresponds with the student's Master curriculum signed by the tutor.
- The application takes place within four years after beginning the Master's program.

A maximum of 130 credits are recognised towards the Master's degree. Further credits may be listed on a separate page of the academic record at the request of the student (Addendum Master's degree – Academic Record Translation).

It is not possible to transfer performance assessments or credit points from previous studies

After gaining all required credit points and classifying possible additional courses into the final academic record and addendum, students must print the diploma request, sign it and submit it to the Student Administration in the Department of Mechanical and Process Engineering:

→ www.mystudies.ethz.ch

When these points have been fulfilled, the Master's degree will be conferred and the student may assume the title of:

Master of Science in Nuclear Engineering ETH Zürich – EPF Lausanne

or in the short form

MSc NE ETH Zürich – EPF Lausanne

or with the additional information

Joint Degree ETH Zürich – EPF Lausanne

The degree certificate is issued jointly by EPF Lausanne and ETH Zurich.

The Overall Grade Point Average of the Master's degree is composed of the weighted grade point average of the following two grades:

- The grade of the Master's thesis: **Weight 1**
- the weighted average of all the remaining grades listed in the diploma request, according to the credit points of each course: **Weight 3**

The Industrial Internship is not part of the final grade point average.

Students receive German and English transcripts, ranking information and a Diploma Supplement in addition to an official diploma either in German, French or Italian.

Outstanding students with an overall average grade of 5.75 (or higher) will be awarded with the title "passed with distinction". This title will be specified on the diploma and the transcript.

1.4 Duration and Terms

The Master's program is designed as a full-time study program. The completion of 120 ECTS requires an average of 4 semesters, or two years. The Master's degree must be obtained within four years, otherwise credits will expire and students may be disqualified from graduation.

The Rector may approve an extension of the study duration under special circumstances, if the request is submitted in due time.

If an applicant for the Master's program is accepted with additional requirements, the maximum permitted duration of studies may be extended by half a year for required extra credits in the range of 21 – 30 and by one year for required extra credits in the range of 31 – 60. For fewer than 21 required extra credits no extension is granted.

1.5 Language

The Master's program is taught in English.

2 Administrative Application - myStudies

The web application “myStudies” enables ETH Zurich students to execute their administrative tasks online. myStudies application is available to all active ETH Zurich students, using the “nethz” (username) and password. The username and password will be assigned by the Rectorate once complete enrollment documents are received by ETH Zurich.

→ www.mystudies.ethz.ch

Essential functions in this application are:

At the semester start:

- Enroll for the coming semester or take a semester on leave of absence.
- Register for course units (lectures, colloquia, exercises, Semester projects/papers).
- The personal weekly schedule can be checked in accordance with the enrolments.

During the semester:

- Registration for examinations, withdrawal from examinations.
- Publication of the personal examination timetable.
- Access to electronic learning materials.

After the performance assessment session:

- The results of performance assessments decreed can be checked in the transcript of records and relocated if necessary.
- Submit the request to issue the degree.

3 Performance Assessment

A performance assessment is required for all courses of the program. The type of assessment is defined by the lecturer. For example, assessments can be made through exercises, projects, presentations or tests. Details may be found in the Course Catalogue of ETH Zurich.

→ www.course-catalogue.ethz.ch

→ www.ethz.ch/students/en/studies/performance-assessments.html

Credit points are only issued if the assessment is graded with at least a 4.0 (out of a 6.0) or a “pass”. The Core Courses, the Semester project and the Master's thesis must be assessed with a grade. In the case of unsatisfactory performance, the performance assessment may be repeated once, whereas the Semester project and the Master's thesis need to be on a new subject.

3.1 Grading System

Courses can be assessed with “pass/fail” or with a grade. A course is passed if the grade is 4.0 or higher. In Switzerland the following general grading scale is used:

6.0 – 5.75	excellent
5.5 – 5.25	very good
5.0 – 4.75	good
4.5 – 4.25	satisfactory
4.0	pass
3.5	fail
3.0	poor
2.5	very poor
2.0	extremely poor
1.0	not measurable

Grading scale

The grading scale at ETH Zurich ranges in courses with quarter grade steps (0.25).
ETH Zurich does not use the ECTS Grading Scheme.

3.2 Credit Points

The credit system of ETH Zurich is based on the European Credit Transfer System (ECTS). Credits are assigned to each learning unit according to the expected student workload.

The ECTS system is based on the workload of a student. 60 ECTS are equivalent to one year of full-time study (about 1800 hours). Therefore, 1 ECTS corresponds to a 30 hour workload.

Courses at D-MAVT are indicated with credit points as well as weekly hours. In general 4 ECTS are equal to 3 hours contact time (lecture + exercises).

Credit points are awarded for successfully completed assessments. Partial awarding of credit points is not allowed. Students must file for the Master's degree within the stipulated time frame or credits will expire.

A summary of the student's credit points can be found at:

→ www.mystudies.ethz.ch

Credits acquired via courses which are offered in ETH Bachelor's and Master's degree programs may be recognised towards the Master's degree if these credits have not already been counted towards the Bachelor's degree.

It is not possible to recognize ECTS credits obtained from previous studies outside ETH Zurich.

3.3 Examinations

Information on the examination mode for every course can be found in the Course Catalogue in the category "Performance assessment information":

→ www.course-catalogue.ethz.ch

ECTS credits	Number of ECTS received after successfully completing examination
Examiners	Name of the lecturer
Type	Session examination or end-of-semester examination, graded or ungraded semester performance
Language of examination	German / English
Course attendance confirmation required	Not required
Repetition	Repetition only possible after re-enrolling for the course unit / repetition possible without re-enrolling for the course unit
Additional information on mode of examination	Any additional information about the exam
Mode of examination	Oral / Written, duration
Written aids	Pocket calculator, compendium, etc. ...

Information about examinations in the Course Catalogue

If a change in specification affects the ongoing semester, students will be informed.

Master examinations are always single and conducted individually.

At ETH Zurich different types of examination are possible:

Session examinations: This form of performance assessment is carried out during the examination sessions, which are held twice a year (once in the winter session (January/February) and once in the summer session (August)). Students must register

for session examinations during the registration period. These examinations are planned by the Examinations Office and are listed in the student's personal examination schedule, which is shown in myStudies. Not all session examinations are offered each session. There are performance assessments which are only offered in the session immediately after the course. These examinations are identified in the Course Catalogue by the following label: "Repetition only possible after re-enrolling for the course unit".

End-of-semester examinations: This form of performance assessment is carried out during the last two weeks of a semester and during the first two weeks after the end of the semester. Registration during the prescribed period is also necessary for performance assessments. The examination dates are announced by the lecturer offering the course. These examinations are thus not shown in the examination schedule in the online enrollment. If it is possible to repeat a performance assessment without re-enrolling in a course, a repetition date, generally at the start of the following semester, is offered. The lecturers offering the course also announce these dates. Students must register for a repetition date using the online enrollment; this is only possible once the Administration Office has officially published the results.

Semester performance: This usually takes the form of integrated performance assessments during the semester or performance assessments which take place outside of the normal semester schedule (e.g. block courses). Semester performances may be graded or ungraded. No separate registration is required for this form of performance assessment. However, students must enroll in the respective course.

The student must register for the examination during the third or fourth week of each semester:

- www.mystudies.ethz.ch
- www.ethz.ch/en/studies/registration-application/master/application.html
- www.ethz.ch/students/en/news/academic-calendar.html

The provisional specifications are on the personal examination plan, which is published on

→ www.mystudies.ethz.ch

about four weeks (Spring semester), respectively six weeks (Autumn semester) before the end of the semester.

It is only possible to repeat a failed examination if the offering department of ETH Zurich or the respective university provides no other regulations for the repetition. A passed examination cannot be repeated.

It is possible to withdraw from examinations via myStudies (otherwise the examination will be considered as a first attempt), according to the following deadlines:

- Session examinations: from the third week of the semester until Sunday at midnight (24:00 hours) one week before the start of the examination session.
- End-of-semester examinations: from the third week of the semester to the penultimate week of the semester (Monday morning, 8:00 hours).

4 Program Requirements, Application and Enrollment

The joint *Master of Science in Nuclear Engineering*-program has a strongly interdisciplinary nature and students can apply to the program on the basis of a Bachelor's degree in a broad range of basic and engineering sciences:

- Chemical Engineering
- Chemistry
- Electrical Engineering and Information Technology
- Mechanical Engineering
- Materials Science
- Mathematics
- Micro-engineering
- Physics

Candidates for the Master's program must present proof of specialized and profound knowledge and abilities in the fields of science and engineering. These skills are a minimum requirement and serve as a basis for the admission process. To be admitted, students must meet the following requirement profile, largely covered by the common elements of the first 2 years of a university education in science and engineering (see Appendix to the "Program Regulations 2014 of the Joint Master's degree program in Nuclear Engineering – Department of Mechanical and Process Engineering"):

- Minimum required contents in Mathematics: 18 ECTS e.g. Analysis I + II + III
- Minimum required contents in Physics: 12 ECTS, e.g. Physics I + II
- Minimum required contents in Engineering Sciences: 12 ECTS, from two of the following areas: Mechanics, Electrical Engineering, Thermodynamics, Process Engineering, Chemical Engineering, Materials Science

Admission of all applicants is based on the program requirements. The following points will be considered in the evaluation process:

- Assessment of the profile
- Performance and grades
- Letters of reference
- Motivation letter
- Command of English (TOEFL or other recognized language tests)
- Test (GRE)

The evaluation of the Bachelor's degree is made based on the corresponding Bachelor of Science degree from EPF Lausanne or ETH Zurich. Admission is made based on an individual evaluation of the application file (evaluation sur dossier) to establish whether students have sufficient prerequisite courses in the Bachelor's degree.

Students whose Bachelor's degree does not fully meet the requirement profile can be admitted with the requirement that they obtain additional credits from Bachelor courses. Of the additional requirements, a maximum of 30 ECTS may be completed during the Master's program.

Students holding a degree from a Swiss University of Applied Sciences are admitted with the precondition that they must take a minimum of 40 ECTS, up to a maximum of 60 ECTS of additional courses. The additional requirements depend on the specialization at the Swiss University of Applied Sciences.

Students can be admitted with or without additional requirements, but they may be rejected as well. The Rectorate will inform the students about the decision in writing.

4.1 Application

The Rectorate receives all applications. The application form and detailed information about the application can be found on the web:

→ www.ethz.ch/en/studies/registration-application/master.html

ETH students have to apply to for the Master in Nuclear Engineering, online in the admission category "Graduates of ETH Zurich".

4.2 Registration and Enrollment

Upon admission, students receive an invitation to enroll from the Rectorate, together with the information requested for the admission. Upon successful enrollment, students are matriculated and receive their access data for all the web tools.

All students must enroll for the chosen Master's program via the electronic enrollment system (myStudies). This tool is also used to enroll for the courses; this should be done after the tutor approves the chosen courses (Agreement between Master Tutor and Student).

Students from ETH Zurich that have not finished a Bachelor's program must enroll for both the Bachelor's program and the Master's program. Semester fees are only billed once.

→ www.mystudies.ethz.ch

4.3 Visa and Residence Permit

Students can apply for the Master's program either at ETH Zurich or at EPF Lausanne. The students have to submit the visa application in person at the Swiss diplomatic mission (embassy or consulate general) at the place of residence at least three months before entering Switzerland. The following link clarifies whether the student needs a visa or not:

→ www.bfm.admin.ch/bfm/en/home.html

→ www.ethz.ch/en/studies/international-immigration-housing.html

The application must be supported by all of the documents listed in "Guidelines for entering Switzerland for foreign students"

→ www.ethz.ch/en/studies/financial.html

→ www.ethz.ch/en/studies/international-immigration-housing.html

Anyone who stays in Switzerland for more than three months must obtain a residence permit and in the case of a change of residence to a different canton a new permit must be requested. Because the first semester (autumn) takes place in Lausanne (Canton Vaud) and the second semester (spring) in Zurich (Canton Zurich), students must request a residence permit authorization for each semester from each canton. In the third and fourth semesters students are free to choose where they want to live in order to follow the courses at PSI or carry out their Master's thesis. It is therefore important that they still apply for a residence authorization in the Canton of residence.

For questions concerning residence authorization, students can contact:

International Student Support

HG F 22.3

Phone: +41 44 632 20 95

Fax: +41 44 632 11 17

E-Mail: international@rektorat.ethz.ch

5 Useful Information about ETH Zurich and EPF Lausanne

ETH Zurich

Consistently rated among the top universities in Europe, ETH Zurich is a leading participant in the world of research and education in Switzerland and abroad. Its 16 departments offer Bachelor, Master and Doctoral programs in engineering and natural sciences.

ETH Zurich has more than 18,000 students from approximately 80 countries, 3,800 of whom are doctoral candidates. More than 400 professors teach and conduct research in the areas of engineering, architecture, mathematics, natural sciences, system-oriented sciences, and management and social sciences.

21 Nobel Laureates have studied, taught or conducted research at ETH Zurich, underlining the excellent reputation of the institute; the most famous graduate of ETH was none other than Albert Einstein.

The international environment – close to 60% of the professors come from outside of Switzerland – and the excellent teaching and research infrastructure make ETH Zurich the ideal place for creative individuals. Connections with business and industry are strong, as the Greater Zurich Area is the economic centre of Switzerland and home to numerous international companies.

ETH has two principal locations: one in the centre of Zurich and the Science City campus at Hönggerberg, just outside the city. Students participating in the Master's program in Nuclear Engineering spend most of their time at the central campus.

→ www.ethz.ch

EPF Lausanne

Located in full view of the Alps on the north side of Lake Geneva in one of Europe's most beautiful cities, EPF Lausanne is home to over 9000 students. With state-of-the-art facilities in a single campus, bright, motivated students, and an outstanding faculty, EPFL's reputation as a top-rate teaching and research institution continues to grow. There are over 110 nationalities represented on campus. With 50% of its faculty recruited internationally and 65% of the PhD students coming from abroad, EPF Lausanne is one of the most international universities in the world. The campus is structured to foster innovation and interdisciplinary research, and students benefit from this atmosphere as their skills and interests evolve.

→ www.epfl.ch

5.1 Zurich

A versatile offering of sports, cultural, and leisure activities provides a welcome complement to the intense and demanding student life. Zurich is an attractive city with an extremely high standard of living. Although relatively small, with 360,000 inhabitants, Zurich has a metropolitan flair, excellent sports facilities, an extensive range of cultural and recreational offerings – and a very vibrant nightlife. The beautiful location at the end of Lake Zurich makes the city very pleasant in the summer and winter. The nearest ski slopes are less than an hour away.

5.2 Lausanne

Lausanne, the capital of Canton Vaud, lies on Lake Geneva in the French-speaking part of Switzerland. Its population of 135,000 includes some 25,000 students. Lausanne plays a major role in the field of international sport. In particular, as it houses the headquarters of the International Olympic Committee (IOC), it has earned the title of "Olympic Capital". The town is characterized by its steep streets and the over 500 m difference in level between the shores of Lake Geneva and the city's heights.

5.3 Tuition and Cost of Living

Students should budget between CHF 16,000.-- and 26,000.-- (Euro 13,000.- to 21,000.-) per year for tuition and cost of living. This covers tuition and student fees (CHF 664.-- per semester, as higher education is publicly funded in Switzerland), accommodation, subsistence, health insurance and other personal costs.

5.4 Maps and Directories

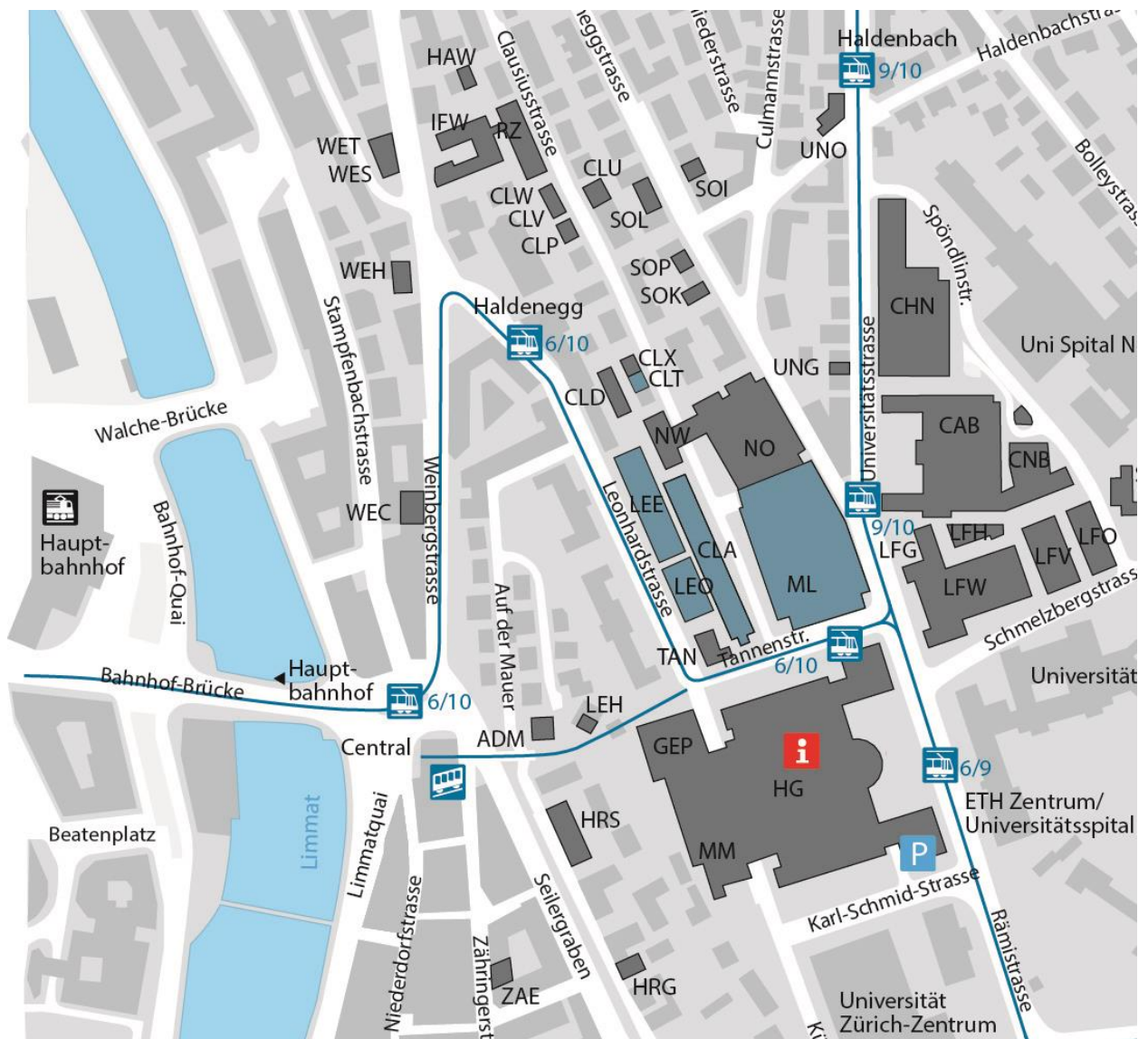
City Guide of Zurich

→ www.stadtplan.stadt-zuerich.ch/zueriplan/stadtplan.aspx

ETH Building map

Location of D-MAVT and ETH-Main Building

→ www.mavt.ethz.ch/the-department/locations.html



5.5 D-MAVT Contacts

General information about the Department of Mechanical and Process Engineering:

→ www.mavt.ethz.ch

Student Administration of the Department of Mechanical and Process Engineering
ETH Zurich
LEE K 208
Leonhardstrasse 21
CH-8092 Zurich

Opening hours for Student Administration & Internship Services:

During the semester	Tue: 09:00 – 13:00, Thu: 13:00 – 16:00 Wed & Fri: 09:00 – 12:00
During the semester break or consultation by appointment	Tue & Fri: 09:00 – 12:00, Thu: 13:00 – 16:00

Student Administration (general questions, administration, examinations):

Phone: +41 44 632 24 57 or +41 44 632 24 52
ETH Zentrum, LEE K 208
E-Mail: info@mavt.ethz.ch

Internship Services

Phone: +41 44 633 32 83
ETH Zentrum, LEE K 208
E-Mail: praktikantendienst@mavt.ethz.ch

5.6 Contacts at Rectorate

Listed below are some of the most important weblinks and contacts. The Rectorate is responsible for the administration of teaching and hence for study in general, but not for the study programs in detail.

→ www.ethz.ch/students/en/studies/administrative.html

International Student Support

ETH Zurich, Main Building, HG F22.3

Phone: +41 44 632 20 95

E-Mail: international@rektorat.ethz.ch

Admissions Office

ETH Zurich, Main Building, HG F 21.2-21.5

Opening hours for Master students: Mon–Fri 11:00-13:00

Phone: +41 44 632 93 96 ; +41 44 632 28 80 ; +41 44 633 91 78

E-Mail: master@ethz.ch

Registrar's Office

Registration, enrollment, semester on leave of absence

ETH Zurich, Main Building, HG F 19

Opening hours: Mon–Fri 11:00-13:00

Phone: +41 44 632 30 00, Fax: +41 44 632 10 61

E-Mail: registrar@rektorat.ethz.ch

Examination Office

ETH Zurich, Main Building, HG F 18.1

Phone: +41 44 632 20 68

E-Mail: exam@ethz.ch

Opening hours : Mon – Fri: 11:00 – 13:00 or by appointment

5.7 Further Contacts and Weblinks

Internal Phone Directory of ETH Zurich

www.ethz.ch/person-search

AMIV (Academic Association of Mechanical and Electrical Engineers, ETH)

www.amiv.ethz.ch

Woko Studentische Wohngenossenschaft

Sonneggstrasse 63, 8006 Zürich

www.woko.ch

Housing Office University Zurich and ETH Zurich

Sonneggstrasse 27, 8006 Zürich

www.wohnen.ethz.ch

Arbeitsvermittlung der Studentenschaft der Universität Zürich

www.arbeitsvermittlung.unizh.ch

Nightline Zürich

(Telephone hotline in the evening hours by students for students of Zurich University and ETH Zurich, Mon-Fri: 20:00 – 24:00)

Phone: +41 44 633 77 77

E-Mail: info@nightline-zuerich.ch Website: www.nightline.ch

ETH Zurich Ombudsman (help and mediation in case of conflict)

(Confidential qualified help in case of serious difficulties, conflicts and personal crises)

www.ethz.ch/de/die-eth-zuerich/organisation/ombuds-und-vertrauenspersonen/ombudsstelle.html

Psychological Counseling University Zurich and ETH Zurich

Phone: +41 44 634 22 80

E-Mail: pbs@ad.uzh.ch

www.pbs.uzh.ch/index_en.html

6 Annex

6.1 Tutors

Prof. Andreas Pautz

EPFL, Section of Physics

PSI, NES, Laboratory of Reactor Physics and Systems Behaviour

lrs.epfl.ch/

Focus: Will be published soon

Prof. Horst-Michael Prasser

ETHZ, D-MAVT, IET, Laboratory of Nuclear Energy Systems

PSI, NES, Laboratory of Thermal Hydraulics

www.lke.mavt.ethz.ch

Focus: Energy Systems, Thermal Hydraulics, Reactor Safety

Prof. Minh Quang Tran

EPFL, Department of Physics, Centre de Recherches en Physique des Plasmas

crpp.epfl.ch

Focus: Physics and Materials, Plasma Physics, Fusion Technology

Prof. Philipp Rudolf von Rohr

ETHZ, D-MAVT, IPE, Transport Processes and Reactions Laboratory

www.ipe.ethz.ch/laboratories/ltr/index_EN

Focus: Multiphase Transport Phenomena, Plasma Assisted Processes

6.2 Tutor Agreement



Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Department of Mechanical and Process
Engineering

Master in Nuclear Engineering

Agreement between Master Tutor and Student – Master Curriculum

Last name	First name	Student ID

Master program: Nuclear Engineering

Start of Master study: (HS/year).....

Tutor:

LE-Nr.	Course title	HS/FS	ECTS
Core Courses compulsory (32 ECTS)			
Core Courses Elective (30 ECTS)			
Elective Courses (12 ECTS)			
Entrepreneurship and Technology Management (2 ECTS)			
Free Elective (10 ECTS)			
LE-Nr.	Title	Supervisor	
Semester Project (8 ECTS)			
Master Thesis (30 ECTS)			

Date:.....

Signature tutor:.....

DMAVT

Signature student:.....

ETH Zurich
Department of Mechanical and Process Engineering
Leonhardstrasse 21
8092 Zurich

www.mavt.ethz.ch

