



**Study Handbook**  
**Master of Science in Neuroengineering**  
**Winter Term 2024/25**

Issue date: October 2024

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Master of Science in Neuroengineering (MSNE)

[www.cit.tum.de/en/cit/studies/degree-programs/master-neuroengineering/](http://www.cit.tum.de/en/cit/studies/degree-programs/master-neuroengineering/)

The MSNE Program is supported by the Elitenetzwerk Bayern (ENB)

[www.elitenetzwerk.bayern.de](http://www.elitenetzwerk.bayern.de)



**Publisher:**

TUM School of Computation, Information and Technology  
Academic and Student Affairs Office  
Theresienstr. 90  
80333 München

Legally valid are only the official published general academic and examination regulations for bachelor's and master's programs (APSO) at Technische Universität München and the Academic and Examination Regulations for the master's program in Neuroengineering (FPSO).

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## Preface

Dear MSNE Student,

The intent of this handbook is to explain the regulations of the MSNE program and to provide you with a “road map” for your studies, beginning with the planning of the first semester and ending with the graduation two years later.

As an introduction, Chapter 1 gives some hints on where to find general information about studying at TUM. Chapter 2 presents the program and explains the study goals. Chapter 3 is the main part of the booklet. It includes guidelines for modules/courses, research projects, and the master’s thesis. The basic structure of the program is shown and the different parts are explained, followed by a list of requirements for graduation.

We hope that this handbook will help to answer most of your questions. If you have any comments on how to improve this booklet, do not hesitate to communicate your ideas.

Further information can be found on the website:

[www.cit.tum.de/en/cit/studies/degree-programs/master-neuroengineering/](http://www.cit.tum.de/en/cit/studies/degree-programs/master-neuroengineering/)

The primary point of contact for queries related to the MSNE are personal meetings with the Manager (please arrange for appointments) or the e-mail address:

[msne@ei.tum.de](mailto:msne@ei.tum.de)

Sincerely,

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**Program Director**

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# 1 General Information about Studying at TUM

The website [www.tum.de/en/studies/](http://www.tum.de/en/studies/) offers some interesting facts about TUM and its study programs. You will also find important information concerning formalities, such as enrollment, residence permit, health insurance etc. Please read those pages very carefully.

It is very important that you make sure that the program management knows your exact residence and e-mail address. In addition, this address should be correct in your TUMonline account. Failure to do so may result in loss of essential documents for enrollment and studies.

The official university calendar, which includes the semester breaks and holiday, can be found here:

<https://www.tum.de/en/studies/application/application-info-portal/dates-periods-and-deadlines>

MSNE study program is coordinated by **TUM School of Computation, Information and Technology** <https://www.cit.tum.de>

The Technical University of Munich (TUM) has recently moved its internal structure towards modern matrix management, in line with international models. Its subject-specific departments are being merged to form seven TUM schools, linked by interdisciplinary research centers. In this process, the Departments of Mathematics, Informatics and Electrical and Computer Engineering consolidated their expertise to form the new **TUM School of Computation, Information and Technology**.

## 2 Overview & Study Goals of the MSNE Program

Neuroengineering is an emerging interdisciplinary field that aims to translate findings in neuroscience to real-world practical engineering applications. The successful development of neuro-inspired technical approaches will lead to a new generation of smart systems, which achieve complex functions in an efficient manner, and will simultaneously advance our understanding of neuroscience.

The ENB Elite Master of Science program in Neuroengineering (MSNE) at the Technical University of Munich (TUM) is a two-year graduate program with an optional Research Excellence Certificate. The two-year program includes a 9-week research project to be performed at a research institution or in industry and a 6-month period for the completion of the master's thesis. The program is taught in English. It is hosted by the TUM School of Computation, Information and Technology. The Study program launched in October 2016.

The MSNE program is interdisciplinary and combines experimental and theoretical neuroscience with profound training in engineering. Besides taking a series of mandatory core courses, students will have the opportunity to choose from electives from multiple disciplines and to gain research experience under the guidance of world-renowned faculty. The program aims to attract high-profile international and national students and will provide a unique skill set that can open up career possibilities beyond the conventional job market.

The core skills acquired in the MSNE program are complemented by hands-on practicals, early-career training for independent research (e.g. project design, or presentation and debating skills), and awareness of ethical aspects and societal acceptance of neuro-technology. The MSNE program offers exclusive interdisciplinary education with integrated soft-skills training

(e.g. science-communication, entrepreneurship, leadership), so that graduates can serve the growing academic, economical, and societal demand better.

### 3 MSNE Study Guidelines

The following description of the basic structure of modules and courses at TUM is helpful for a better understanding of TUMonline System. Modules are the building blocks of Master's programs at TUM. A module consists of one or more courses with aligned content and schedules, offered in form of lectures, tutorials, labs, seminars, project work, etc. The module description provides information on how the content of the module is structured and presented, recommended background knowledge and literature recommendations, and the learning outcomes. Module descriptions as well as courses can be found in TUMonline portal ([www.campus.tum.de](http://www.campus.tum.de)), the central campus management system. All module descriptions for a particular school can be found by clicking on the respective academic department on the homepage of the TUMonline portal and then by following the "Module Handbook" link. All courses for a particular school can be found by clicking on the respective academic department on the homepage of the TUMonline portal and then by following the "Course" link. Each module has a unique module number (e.g. "EI60002"), helping you to find the corresponding modules in your curriculum as well as in TUMonline. Further information on this basic structure and a TUM-Online Handbook for students can be found here:

<https://www.tum.de/en/studies/during-your-studies/organizing-your-studies/course-offerings>

#### 3.1 Structure of the Program

The MSNE program is a two-year program, divided into four semesters. This includes a 9-week period for a research project and a 6-month period for the completion of the Master's Thesis. Courses start in mid of October. The following schedule provides an overview:

##### Recommended Schedule for the Program

Mid October - mid February	Semester 1
End of February	Final exams for semester 1
March - mid April	Spring break (or opt. 6 week research project)
Mid April - July	Semester 2
Mid to end of July	Final exams for semester 2
August - mid October	9 week research project
Mid October - mid February	Semester 3
End of February	Final exams for semester 3
March - September	Semester 4: master's thesis
October/November	Graduation

The MSNE curriculum consists of modules for the MSNE-Program (i.e. for getting a master's degree) and additional modules for the optional Research Excellence Certificate (i.e. for getting a master's degree along with the classification "with honours").

The MSNE curriculum is based on required modules and (mentor-approved) elective modules.

Required modules are mandatory for all students enrolled in the MSNE program, i.e. students must pass all of them. Elective modules (also called “Electives” for the sake of brevity) may be selected by students. Students can choose to take Electives from the existing MSNE Electives catalogue (TUMonline), or they can choose new modules along with a mentor. If they choose new modules (not yet listed in the MSNE Electives catalogue), this requires mentor approval.

At the end of a semester, the final exams for each module take place. The rules for repeating exams are described later. If students do not pass an elective module, they may repeat it or replace it with another elective module, as long as the new module is also listed as MSNE Elective or mentor-approved.

All modules listed in the column “Research Excellence Certificate” (REC) of the MSNE curriculum are optional, since the certificate is optional itself. Students do not have to apply or register for the REC. As a default, all electives passed are assigned to the MSNE program. By having successfully completed the MSNE program (i.e. in most cases by finishing the Master’s Thesis), the electives on top of the graduation requirements for the MSNE Program will be assigned to the REC. If all requirements for the REC are fulfilled, the certificate will be awarded.

Most required modules in MSNE are consisting of weekly lectures of two SWS<sup>1</sup>, a weekly tutorial of one SWS and a weekly hands-on lab of another one SWS. Almost all modules are taught by the department’s professors. Tutorials and labs are mostly taught by teaching assistants supported by student tutors. The schedule for each semester enables students to attend all required modules, as long as students follow the suggested 4 semester scheme. Students should select and attend to their individual elective modules in a way and sequence leading to no significant time overlap with required modules.

In the first semester, the mentors might decide on having a specific module serving to catch-up with knowledge and skills required as a prerequisite for a successful start in the MSNE study program. If required for an individual student, the elective module of the first semester will be a so called makeup module. The makeup module serves to balance different levels of students coming from various domains. Students are strongly encouraged to take this makeup module in the first semester. The MSNE program is offering special modules for this purpose.

Students opting for the optional REC are encouraged to take a 6-week research project in the first semester break. New 6-week Research Project Scheme: Students are **encouraged** to perform this 6-week research project in (research-oriented) industry, using a [simplified project registration and assessment process](#). Students may also consider to do this 6-week project later, e.g. to complete the 9 week project first, to arrange for a scheme with main parts of the project in full-time and a smaller part in part-time-fashion – partially overlapping with lecture period, to schedule the project(s) right before the Master’s Thesis, to use a project as a “starter project” to get more familiar with Master’s Thesis topics, to perform projects along with research-oriented industry (as long as a MSNE examiner agrees to serve as supervisor), ...

In the second semester, students also participate in a literature seminar where they prepare presentations and write essays about a particular research topic. After the second semester students should do a 9 week, full-time research project preferably at a chair at TUM or LMU or in one of the partner institutions.

In the third semester, students will participate in another literature seminar and foster their capabilities in scientific debating. The third semester serves as a specialization phase, allowing students to intensify a certain direction by selecting 2 (or 3 in case of the REC) elective modules as well as generating a substantial awareness of societal expectations and societal needs or neuroengineering technology.

A fundamental part of the program is the Master’s Thesis. It gives students the opportunity to explore a topic of their choice in depth. The thesis enables students to improve research,

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<sup>1</sup> SWS is the German acronym for “Semesterwochenstunden”, i.e. weekly semester hours. 1 SWS is equivalent to 45 Minutes.

analytic, and managerial skills. Research and analytic skills include the application methods and knowledge learned in the courses and through literature review. Managerial skills include planning and doing a project in a limited period of time.

You may vary the sequence of all modules according to your individual constraints. However, the MSNE program will offer all courses as close as possible to this basic scheme. We recommend all students to follow this suggested plan.

The sequence and timing of the research projects (2 projects and 3 semester breaks) can be modified easily, without major impact on the overall schedule. Therefore, we recommend to use this flexibility first and to stay with the recommended sequence of mandatory modules as far as possible.

After having successfully completed the program, students are awarded the Master of Science (M.Sc.) in Neuroengineering degree. This academic degree entitles students to enter doctoral programs. If students are interested in pursuing a doctorate at TUM we strongly recommend that they acquire a good command of the German language during the two years of the MSNE program, as this will increase their chances of being offered a doctoral research position.

### 3.2 MSNE Curriculum

The MSNE program is designed as a 2-year full-time program, which requires students to complete 120 ECTS to obtain the academic degree Master of Science in Neuroengineering. An optional Research Excellence Certificate (REC) can be obtained by completing additional 30 ECTS in parallel.

#### Suggested Curriculum over 4 Semesters

Semester	MSNE Program		Research Excellence Certificate (Optional)	
		ECTS		ECTS
1 (winter)	Statistics and Probability Theory	5	Elective	5
	Mixed Signal Electronics in Neuroengineering	5		
	Neuro-Anatomy and Neuro-Physiology	5		
	Computational Neuroscience	5		
	Elective (or makeup elective)	5		
			6 Week Research Project	8
2 (summer)	Large-Scale Modeling and Large-Scale Data Analysis	5	Elective	5
	Neuroengineering Interfaces and Materials	5		
	Neuro-Recording Methods	5		
	Literature Seminar, Scientific Debating, Colloquium 1	6		
	Elective	5		



Semester	MSNE Program		Research Excellence Certificate (Optional)	
		ECTS		ECTS
	9 Week Research Project	12		
3 (winter)	Neuro-inspired Systems Engineering	6	Elective	5
	Societal Impact, Ethics	5		
	Literature Seminar, Scientific Debating, Colloquium 2	6		
	Elective	5		
	Elective	5		
			Neuroengineering Symposium	2
4 (summer)	Master Thesis	30	Elective	5
<b>Total</b>		<b>120</b>		<b>30</b>

**Suggested variations** without significant impact on mandatory module schedulability:

- Switch sequence of 6-week and 9-week research projects
- Scheduling the research project(s) right before Master's Thesis
- Attending "Societal Impact, Ethics" Module already in first semester
- Asking your peer students what worked-out well...

**Ensure having relax time, use flexibilities in the program to schedule the breaks you need, approach the MSNE program coordinator early in case of (planned) longer leaves.**

**Modules in the MSNE Program:**

- Modules in Semester 1**

Module Number	Module	Lecturer(s)	Profile	Semester	Credits
EI60007	Statistics and Probability Theory	Kozielski	EI <sup>2</sup>	W	5
EI60002	Mixed Signal Electronics in Neuroengineering	Wolfrum	EI	W	5
ME60003	Neuro-Anatomy and Neuro-Physiology	Jacob et. al.	ME <sup>3</sup>	W	5
EI60004	Computational Neuroscience	Franklin et. al.	SG <sup>4</sup>	W	5
	Elective (or makeup elective)			W	5

- Modules in Semester 2:**

Module Number	Module	Lecturer(s)	Profile	Semester	Credits
EI60005	Large-Scale Modeling and Large-Scale Data Analysis	Portugues Peters	ME	S	5
EI60006	Signal Processing, Dynamic System Modeling	Seeber et al.	EI	S	5
EIXXXXX	Neuroengineering Materials and Interfaces	Kozielski	EI	S	5
EI60008	Literature Seminar 1, Scientific Debating, Colloquium	Various (Cheng)	EI	S	6
ME60001	Neuro-Recording Methods	Westmeyer, Sirota, Ploner, Wohlschläger	ME, CH <sup>5</sup>	S	5
	Elective			S	5

After Semester 2, students take a 9-week research project with 12 ECTS (EI60016)

- Modules in Semester 3:**

Module Number	Module	Lecturer(s)	Profile	Semester	Credits
EI60009	Neuro-inspired Systems Engineering	Cheng	EI	W	6
POL70073	Societal Impact, Ethics	Beck	GOV <sup>6</sup>	W	5
EI60012	Literature Seminar 2, Scientific Debating, Colloquium	Various (Cheng)	EI	W	6
	Elective			W	5
	Elective			W	5

<sup>2</sup> EI = Electrical and Computer Engineering

<sup>3</sup> ME = Medicine

<sup>4</sup> SG = Sport and Health Sciences

<sup>5</sup> CH = Chemistry

<sup>6</sup> GOV = Governance

• **Modules in Semester 4:**

Module Number	Module	Supervisor	Profile	Semester	Credits
EI8950	Master's Thesis			W	30

**Modules for the optional Research Excellence Certificate:**

Module Number	Module	Lecturer(s)	Dep.	Semester	Credits
	Elective			1 <sup>st</sup>	5
EI60013	6-Week Research Project			1 <sup>st</sup>    2 <sup>nd</sup>	8
	Elective			2 <sup>nd</sup>	5
	Elective			3 <sup>rd</sup>	5
EI60011	Neuroengineering Symposium	Cheng	EI	3 <sup>rd</sup>    4 <sup>th</sup>	2
	Elective			4 <sup>th</sup>	5

The modules for the REC will be listed in a separate section of your final certificate, including the module credits and grades achieved. However, the grades of the REC modules will not count toward the final grade in the MSNE program.

### 3.3 Mentoring Concept

Every student will closely interact with an assigned mentor from the associated faculty. Together they plan and adjust the student's elective curriculum, and discuss the student's progress. The mentor supports by giving a reasonable direction to the individual curriculum, while taking into account the students' individual preferences. In addition, the mentor will act as first confidential contact for individual study-related problems. An assembly of mentors and teachers of major elective courses ("**Teaching Committee**") will meet regularly to discuss all students' academic progress at large, and seek solutions for general, non-individual problems that might arise, or for the most severe individual student issues.

#### Constraints

According to the MSNE-specific regulations (FPSO), students have to take at least 20 ECTS elective modules for the master degree. In addition, opting for the optional Research Excellence Certificate, another 20 ECTS elective modules are required.

New modules (modules that not listed in the MSNE Electives catalogue) in the electives part of the curriculum require the acknowledgment of a mentor. The FPSO defines among other things two important constraints:

- a) **Makeup Module:** An assigned makeup module in the first semester allows students to fill-in possibly underrepresented knowledge depending on their earlier education program; In WiSe 24/25, we are offering the make-up module "Fundamentals of Mathematics for Neuroengineering". Students without required makeup module can already select a first elective module. Makeup modules must not become part of the Research Excellence Certificate.
- b) **Paused – currently not applied:** [Modules in German Language: Students who have not proven **German language proficiency** during enrollment must select at least one elective module offered in German language or offered bilingually (German and English

Modules). Instead of such an elective module, students can also take a German language module e.g. offered by the TUM Language Center. This language module will not become part of the MSNE curriculum and it will be listed in a separate section of your final transcript. In case of conditional admission (check admission letter), German language proficiency must be completed latest at the **end of the second semester.**]

## **Mentor**

Mentors are nominated by the MSNE directors and approved by the Board of Examiners MSc<sup>7</sup>. The list of MSNE mentors is available on the website. With the beginning of the first semester each student gets assigned a mentor. A re-assignment is possible due to good reason and with mutual consent (student, old mentor, and new mentor issue a formless request to the directors) or based on director's decision. Criteria are among others a good thematic fit as well as continuity in the mentor-student assignment.

## **Learning Agreement**

Students propose elective modules fitting to their specific direction within Neuroengineering to the mentor. Both discuss the best options and agree on an individual curriculum, the "Learning Agreement". The form sheet for the Learning Agreement will be signed by mentor and student and forwarded to the MSNE program manager ([msne@ei.tum.de](mailto:msne@ei.tum.de)) afterwards. A non-comprehensive overview on electives with neuroengineering context is available at the MSNE program website and can serve as an orientation for students and mentors. As a principle, modules offered by Electrical and Computer Engineering must be at master's level and modules offered by other TUM faculties or LMU shall be on master's level. Students are responsible for selecting and scheduling elective modules in a way not conflicting with their curriculum. They should proactively approach lecturers of electives, especially in modules offered by LMU (TUM students have no guarantee to attend LMU lectures automatically).

Within the learning agreement, there is no assignment of elective modules to the MSNE program on the one hand and the Research Excellence Certificate on the other hand. Exceptions are makeup modules (see above), which always have to become part of the MSNE program. For the purpose of the academic progress check, all electives which can become part of the MSNE program are considered. The student can freely choose among all electives listed in the learning agreement, as long as the constraints indicated above are fulfilled. The learning agreement can get changed anytime by mutual agreement.

## **Mentoring Process Schedule**

At the beginning, students and mentors should discuss possible directions (e.g. Electronic System Design, Computational Neuroscience, Medical Systems, etc.) and validate this decision after the first semester. This decision for a certain direction builds a flexible framework for all the electives in the Learning Agreement. Students as well as mentors are encouraged to setup the Learning Agreement early and to update it in a way preserving freedom for the students to plan the upcoming semester, to arrange with the lecturers and to register for the electives.

In order to enable students to attend at electives from the very beginning, students are encouraged to select their first elective module from the overview list of electives provided on the MSNE website. Modules on the list do not require a mentor approval. This allows our students to find into the mentoring without hard time constraints. Ideal phase for a first

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<sup>7</sup> in German: "Masterprüfungsausschuss"

meeting with the mentor is December-March, discussing the electives students already took during first semester and discussing the intended modules for second semester.

**In General: Exam results in elective modules that are not part of the MSNE Electives catalogue will only get validated, if a corresponding Learning Agreement has been provided to the Program Manager. The Learning Agreement must be provided in the same semester the module was examined!**

Kindly also read the Mentoring Guidelines, explaining the common understanding (mentors, students) and ramping-up sequence more detailed.

### 3.4 Graduation Requirements

To receive the academic degree “*Master of Science in Neuroengineering*”, students have to pass all modules listed in the Column “MSNE Program” of the MSNE Curriculum.

To receive the academic degree “*Master of Science in Neuroengineering*” along with the classification “with Honours”, students have to pass all modules listed in the Column “MSNE Program” of the MSNE Curriculum and – while they are enrolled for the MSNE program – all modules for the Research Excellence Certificate.

### 3.5 Course-Work and Lab Requirements

#### 3.5.1 Grading Scale

The grading scale ranges from 1.0 to 5.0, where 1.0 is the best and 5.0 the worst grade.

The following grades are possible:

1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.3	4.7	5.0
very good		good			satisfactory			sufficient		fail		

Students must report a grade of 4.0 to pass a module. Failed exams in Modules can be repeated according to the academic progress check. It is not possible to repeat passed exams. Grades from the required modules, electives, as well as the Master’s Thesis count towards the final grade point average according to their credit weight. The 9-week research project will not count toward the final grade. Only passed modules (i.e. graded 1.0 – 4.0, or “passed”) will show up in your preliminary transcript. A preliminary transcript can be generated anytime, using TUM Online self-service capabilities. A second document, the “grade report”, lists all your attempts and passed and failed modules as well. This grade report is for your reference only and not intended for e.g. application purpose.

Most modules only have a final exam. In addition, in some modules there are mid-term exams and/or graded homework, where the professors decide how the grades are credited towards the final exams. More information about the types of exams are given in the module description on the MSNE website or in TUMonline. The final exams are scheduled immediately after the end of the semester in which the course was offered.

#### 3.5.2 Academic progress check

The academic progress check is part of the “*General Academic and Examination Regulations for Bachelor’s and Master’s Programs (APSO) at the Technische Universität München*” and the Academic and Examination Regulations for the Master’s program in Neuroengineering (FPSO).

A translated APSO is available, however only the officially promulgated German versions are legally valid!

<https://www.tum.de/studium/im-studium/das-studium-organisieren/satzungen-ordnungen>

**To comply with the standard duration of study, students should achieve 30 credits per semester (APSO). Students are expected to earn a minimum of 22 credits per semester (APSO).** Among other things, APSO and FPSO are defining check intervals in order to ensure the academic progress:

Students will receive a **warning** (APSO)

- in case of less than 15 credits after first semester
- in case of less than 45 credits after second semester
- in case of less than 75 credits after third semester
- in case of less than 105 credits after fourth semester

**Students must receive a minimum number of credits per semester (APSO, FPSO)**

- at least 20 credits of the required modules in the MSNE program by the end of the second semester
- at least 30 credits by the end of the third semester
- at least 60 credits by the end of the fourth semester
- at least 90 credits by the end of the fifth semester
- at least 120 credits by the end of the sixth semester

Whenever students expect to struggle with one of these regulations, they should contact the program manager immediately. **Failure to meet the APSO and FPSO requirements leads to termination of MSNE academic studies<sup>8</sup> !**

Students opting for the Research Excellence Certificate (REC) must complete all REC requirements during the same semester they completed MSNE academic studies. It is not possible to extend duration of studies by another semester in order to complete missing REC modules. REC must be completed latest by the end of sixth semester.

## 3.6 Exams

Failed exams can be repeated up to a certain time limit. Electives alternatively can even be replaced by other (mentor-approved) modules.

### 3.6.1 Board of Examiners

The Board of Examiners Master ECE (in German “*Masterprüfungsausschuss*”) is responsible for all issues concerning exams and grades in your program:

Board of Examiners:

Chair: Prof. Dr. rer. nat. Eva Weig

Secretary: Dipl. Ing. Benita Paraschoudis

Delegate:

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<sup>8</sup> In German: „Exmatrikulation“

<https://www.cit.tum.de/cit/studium/studierende/pruefungsangelegenheiten-module/elektrotechnik-informationstechnik/#c3873>

Please contact the MSNE Team first (E-Mail: [msne@ei.tum.de](mailto:msne@ei.tum.de)) since many aspects of exams and grades can be clarified and solved easily.

### **3.6.2 Registration of Courses and Labs for Exams**

Each semester you must officially register in TUMonline for the exams for all modules which you are attending during the semester. You will also be informed by the MSNE team about the registration period.

Do not forget to register in time, a late registration is not permitted.

Apart from the MSNE curriculum, additional courses (also courses in German) may be attended. However, these extra courses do not count toward your MSNE curriculum. But you also have to register these exams in TUMonline.

### **3.6.3 Identification during Exams**

During an exam all students are requested to present a valid government-issued identity document with picture (i.e. their passport or national identity card), and a proof of enrollment (i.e. student card). Note that the student cards with pictures or public transportation documents with pictures are not valid proofs of identify.

### **3.6.4 Withdrawal of Registered Exams, Illness**

If a student is not able to attend an exam he or she is registered for, he or she should inform the examiner early in order to support the exam-related administrative processes. The exam will be graded with "Nicht erschienen – 5.0". A medical certificate is not mandatory.

However, we recommend to issue appropriate documents, i.e. in case of illness a medical certificate by a physician, issued at the day of the missed exam. We recommend to keep this certificates in your private records. Only in case students are concerned to struggle with academic study progress, we recommend to submit the certificate to the Board of Examiners office or to the program manager.

### **3.6.5 Transcript of Records**

A transcript of records with your grade can be downloaded via your TUMonline account. If you need a signed and stamped transcript, please send us an e-mail: [msne@ei.tum.de](mailto:msne@ei.tum.de)

### **3.6.6 Recognition of Performances**

Depending on BA Degree and depending on other previous studies, students may have already acquired competencies that are also part of MSNE curriculum. Reference is the module description of MSNE modules (section: competencies and skills). In case of almost identical competencies and skills (at least: 2/3<sup>rd</sup> overlap), students may transfer their performance from previous studies to MSNE transcript.

The request for recognition of **performances completed before start of studies at TUM** has to be started **within the first year of studies at TUM** and **before attending the corresponding**

**TUM exam** the first time.

### **MSNE Mandatory Modules:**

Kindly use the form sheets provided here:

<https://www.cit.tum.de/en/cit/studies/students/examination-matters-modules/electrical-computer-engineering/recognitions/>

and send the documents for a first check to [anerkennungen@ei.tum.de](mailto:anerkennungen@ei.tum.de)

During the transfer, numerical grades will be converted, applying the scheme:

<https://www.tum.de/en/studies/application/application-info-portal/grade-conversion-formula-for-grades-earned-outside-germany>

### **MSNE Elective Modules:**

MSNE does not operate with a fixed catalogue of electives modules. The individual set of modules is determined along with MSNE mentor and after MSNE enrollment, reported in a so-called Learning Agreement. Mentors will only recommend modules extending students current competencies and skills. Therefore, recognitions of performance completed **before start of studies in MSNE** are not possible.

However, in case students attend courses at other universities **while being enrolled in MSNE**, students may discuss to include those modules in their Learning Agreement and hereby mapping the external performances to MSNE electives section transcript.

## **3.7 Research Project Guidelines**

The research project has the format of an independent research project work that integrates in or attaches to a larger existing research project; but that not only contains manual task, but also planning and conceptual elements that are similar to the scope in professional life reflecting an engineering approach, including written documentations and presentations. Every participant works on an individual task in an independent way. Every participant is assigned a supervisor matching the topic. The research project is assessed based on a project report (pass/fail credit requirement). The research project module description in TUMonline provides further information. You must register research projects in advance using the CIT Koinon Portal: <https://portal.cit.tum.de/de/Theses>. A straight-forward way is to do the research project at a TUM institute, under supervision of an MSNE examiner. However, you can also do your projects somewhere else, as long as a MSNE examiner formally agrees to the project plan and finally decide on successful completion (a passed / not passed assessment). A list of MSNE examiners is included in this document.

In case the 6-week research project is performed with industry (recommended), the registration and assessment process is simplified. Kindly refer to MSNE website for the detailed process instruction. MSNE offers a non-comprehensive list of companies working in the field and relevant for Neuroengineering, for orientation purpose, however MSNE will not provide individual contacts to industry, so it is up to students to search, to apply and to negotiate for internships.



### 3.7.1 Duration and Timing

The research project is a career-related, full-time (approx. 35-40 hours per week) professional experience at a university (preferably) or in industry with a minimum length of 9 weeks (6 weeks in case of the research project for the REC). Students should schedule it immediately after the second semester until the beginning of the third semester. It has to be completed latest after the sixth semester. Please consider the following suggested timeline:

March	Start looking for research project
End of July	Final exams for semester 2
August through mid October	Research project
Mid October	Semester 3 begins
End of October	Hand in the required paperwork

### 3.7.2 Research Project Arrangement & Registration

Students must arrange for a research project themselves.

To find a research project, please contact the chairs directly. Some chairs list available projects on their website. If you want to do the research project in industry (project during an internship) you have to find a professor at TUM who will supervise it. Please find a professor before signing any industry contract to avoid any inconvenience. In case you need a confirmation that a research project is required by your curriculum, please contact us: [msne@ei.tum.de](mailto:msne@ei.tum.de)

## 3.8 Master's Thesis Guidelines

In the fourth semester, students must write a Master's Thesis under the supervision of a department professor. The duration of the master's thesis is 6 months of full-time involvement. The thesis is worth 30 credits.

Students must fulfill course work requirements of **at least 60 credits** to be allowed to start the thesis work.

Students are responsible for finding a topic for a Master's Thesis. To be able to start in the fourth semester and use the full 6 months, topic arrangements must be completed during the lecture period of the 3rd semester. Please take into account that the arrangements might take some time.

In order to arrange a Master's Thesis you should contact a professor a research assistant with whom you share an interest. Research areas and open topics are posted and described at the bulletin board of the chairs or on the respective website. In some cases, one may do the Master's Thesis in a company within an existing research partnership with one of the department's chairs or at another University. A Master's Thesis in industry cannot be arranged directly with industry partners - it can only be performed at the industry partner when a supervising professor at the university agrees to this. The supervision is still done by the supervising professor. Please be sure to follow the legal rules imposed by the respective chairs and companies.

### **3.9 Final Grade Average**

The final grade point average is the weighted average of the individual final grades of the required and elective modules in the MSNE program and the Master's Thesis according to the credit weight.

### **3.10 Confirmations**

For any certificates related to your studies (e.g. transcript, confirmation of your studies, etc.) please contact the MSNE Team: [msne@ei.tum.de](mailto:msne@ei.tum.de)

## **4 Additional Information**

### **4.1 Computer Access**

Computer access is available to all students within the EIKON project.

Detailed information is available:

<https://www.ce.cit.tum.de/ldv/eikon/>

### **4.2 Room Finder**

Orientation around campus is facilitated by the TUM room finder:

<https://portal.mytum.de/campus/roomfinder>

### **4.3 Accommodation**

The MSNE program does not provide students with accommodation. It is the responsibility of each student to arrange for his/her own accommodation.

### **4.4 Scholarships**

The MSNE program itself does not offer scholarships. Exceptionally qualified students may receive scholarships covering living expenses either from DAAD, Bayhost, companies, their home university, or another private or governmental institution. TUM provides further information on a website:

<https://www.tum.de/en/studies/fees-and-financial-aid/scholarships/tum-scholarships>

## 4.5 Semester Fee, Tuition Fee, Leave of Absence

### Student Semester Fee (All Students)

All students must re-enroll before the next semester starts if they want to continue their studies.

Currently, the deadline for paying the semester fee is 15 August for winter semester and 15 February for summer semester. If you do not pay in time, your enrollment will be terminated automatically.

All information about the semester fee is available on the website:

<http://www.tum.de/en/studies/fees-and-financial-aid/payment-of-fees/>

### Tuition Fees (International Students)

For international students from third countries, i.e. countries that do not belong to the European Economic Area (EU + Iceland, Liechtenstein and Norway), tuition fees will be charged from the winter semester 2024/25.

<https://www.tum.de/en/studies/fees/tuition>

### Leave of Absence

For important reasons (e.g. illness attested by physician, maternity or paternity leave, time off to care for a close relative), students can take a leave of absence for a whole semester.

On the following website you can find more information:

<http://www.tum.de/en/studies/during-your-studies/leave-of-absence/>

While taking a leave of absence, you also have to pay the semester fees. You are not allowed to take part in exams for the first time but you are allowed to take repeated exams.

If you take a leave of absence due to maternity or paternity, you are also allowed to write “regular” exams.

## 4.6 Elite Network of Bavaria (ENB)

Elite Graduate Programs offer an ideal academic setting to exceptionally talented and highly motivated students. The MSNE study program is an Elite Graduate Program supported by the Elite Network of Bavaria, an initiative of the Bavarian State Ministry of Education, Science and the Arts.

The ENB invites all students of its supported programs to register in the ENB Community Portal. The membership is a requirement for receiving a separate REC certificate issued by the ENB. By becoming a member of the Elite network of Bavaria, you will get invitations to academic and societal events and you get in contact with all other students of elite programs. Building an academic network is crucial for any career option following your MSNE program. We strongly encourage you to intensively interact and contribute to this unique and excellent network!

<https://www.elitenetzwerk.bayern.de/>

You will receive an invitation to join this network soon.

## 5 Program Directors, Program Management, MSNE Examiners and Mentors

### Program Director

Prof. Dr. Gordon Cheng

Email: [gordon@tum.de](mailto:gordon@tum.de)

### Program Director

Prof. Dr. Kristen Kozielski

Email: [k.kozielski@tum.de](mailto:k.kozielski@tum.de)

### Program Manager

Isabell Fischer

### Program Support

Susanne Kinzel

Email: [msne@ei.tum.de](mailto:msne@ei.tum.de)

### MSNE Examiners

Kindly see list on MSNE website.

### MSNE Mentors

Kindly see list on MSNE website.