MIDDLE EAST TECHNICAL UNIVERSITY

Study Guide

Master of Science in Robotics

This study guide is for advisory purposes only.

The Graduate Study Regulations are the official and binding rules

for the conduct of the MSc degree.

1. Robotic Master's Program

Robotics stands at the forefront of technological innovation, driving solutions for some of today's most pressing challenges in health, mobility, and sustainability. Developing intelligent robotic systems requires a unique blend of expertise spanning mechanics, electronics, and computer science. The Master's in Robotics offers students an interdisciplinary education that bridges these fields, empowering them to design, build, and control advanced robotic systems. Through a wide range of elective courses, hands-on projects, and access to state-of-the-art laboratories, students gain both deep theoretical knowledge and practical skills. Graduates are well-prepared for careers in key sectors where robotics technologies are increasingly applied, including the defense industry, industrial automation, and biomedical technologies. They are also well-equipped to pursue an academic career in Robotics and participate in Turkey's growing robotics startup ecosystem, supported by METU's vibrant innovation ecosystem.

The program offers a broad selection of Robotic Courses across various disciplines, allowing students to shape their academic path according to their interests. At the end of this program, you will gain in-depth knowledge on Robot Design, Physical Modeling, Advanced Robot Control Techniques, Navigation and Motion Planning, Robot Perception, Artificial Intelligence, and Embedded Systems.

Below, we summarize key points and provide suggestions to help students in their Master's studies. However, we would like to remind students that the information and suggestions provided in this document are not binding. The binding reference and guide for your studies is the Graduate Study Regulations.

1.1. Language

The official language of the Robotic Master's Program at METU is English. All technical courses are taught in English, and English is also the main language in the research environment. However, interested students may benefit from Turkish language courses at METU.

1.2. Duration

The robotic program is designed to be completed within 4 semesters. Ambitious students could complete the coursework in two semesters and the Master's thesis work in the third semester. However, for a more balanced course and research workload, students may follow a 4-semester structure.

According to Article 31 of the Graduate Study Regulations students must complete their coursework by the end of the 4th semester, and the Master's thesis must be submitted by at the latest the end of the 6th semester. A special extension of up to 6 months may be granted at the program committee's discretion.

1.3. Academic Advisor

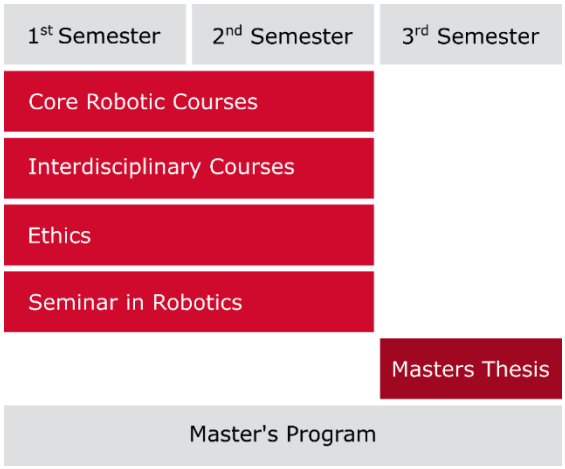
Each Master's student must have a main academic advisor, a METU faculty member affiliated with the Robotics Graduate Program. Students will be assigned to a faculty member during the admission process. In some cases, students could be accepted without a predefined academic advisor. These students must contact the affiliated faculty members and find a tutor until the end of the first semester.

Due to the interdisciplinary structure of the Robotic Master's Program, students are required to find a co-advisor by the end of the first semester. The co-advisor cannot be in the same department as their advisor. For instance, if the advisor is in the Mechanical Engineering Department, the co-advisor must be from a different department or from an external university or company. According to Article 33 of the Graduate Study Regulations, students are free to propose any faculty member at METU as a co-advisor, not limited to those affiliated with the robotics program. In the case of an external co-advisor, they must hold a doctoral degree. The advisor must approve the proposed co-advisor. Then, the student must submit the "co-advisor inquiry form," approved by their advisor, to the institute secretary. Upon the Institute Board's approval, the co-advisor's name will be added to the online system. We suggest that students propose a co-advisor relevant to their interdisciplinary studies, thereby complementing the expertise of their advisor.

Students will select a course and research direction under the guidance of their academic advisor. They are expected to conduct their Master's thesis in their academic advisor's research group. If a student's interest shifts in a different direction during their Master's studies, they can communicate this to their advisor and may find a more suitable advisor.

The advisor will follow the course and research involvement of the student and evaluate the performance at the end of the semester. The details are explained in the Performance Assessment section.

1.4. Curriculum



The students are advised to follow the above curriculum to complete their Master's degree in a timely manner; however, the Graduate Study Regulations are binding in terms of the last semester, requiring completion of the coursework and Master's thesis.

1.4.1. Core Robotic Courses

The students are required to take 3 Core Robotic Courses from each of the CENG, EE, and ME Departments. These core courses form the technical backbone of the program. They provide students with solid foundations in computer science, electrical engineering, and mechanical engineering as applied to robotics. Mastery of these courses ensures that students gain the interdisciplinary knowledge essential for designing and implementing advanced robotic systems.

1.4.2. Interdisciplinary Courses

Students must take four Interdisciplinary Elective Courses from any department at METU. However, students can take at most 4 courses from the same department. Interdisciplinary electives broaden students' perspectives and enable them to tailor their expertise to specific application areas such as biomedical robotics, artificial intelligence, or industrial automation. This flexibility fosters innovation at the intersection of different scientific fields.

1.4.3. Ethics Courses

The students are required to take the "Research Methods and Ethics Course" from the department of their thesis advisor. In this regard, only one of the following courses must be taken: ME 599, EE 595, CENG 590, and AEE 729.

1.4.4. Seminar in Robotics

The student must attend the ROB590 course at METU. This seminar equips students with essential research skills and ethical frameworks necessary for conducting scientific studies. It strengthens their ability to critically evaluate research, design experiments, and communicate their findings effectively. Moreover, the seminar will also introduce students to national and international researchers and state-of-the-art robotic research topics.

1.4.5. Master's Thesis

The Master's Thesis is the capstone of the program, allowing students to apply their cumulative knowledge to solve a novel research problem in robotics. It fosters independent thinking, problem-solving abilities, and contributes to the advancement of the field. Students are required to conduct research under the supervision of their academic supervisor and write a Master's Thesis.

The Master's thesis work begins once students register for the Master's thesis course section under their advisor. Students must register for the thesis course starting from the second semester and continue registering every semester until graduation. Students are advised to complete the majority of their Core Robotic and Interdisciplinary Courses in the early semesters to focus fully on their Master's Thesis.

The thesis will be presented to a thesis jury. According to Article 34 of the Graduate Study Regulations, the thesis jury may consist of three or five members. One of the jury members must be the advisor of the student, and at least one member of the jury must be an external member from outside METU. In the case of a three-member jury, a co-advisor cannot serve as a jury member.

The thesis defense is conducted in English and is open to the university community. After the presentation and Q&A session, the jury evaluates the thesis and decides by majority vote on one of the following outcomes:

- Acceptance of the thesis,
- Requirement for revisions (to be completed and re-defended within three months),
- Rejection of the thesis (leading to dismissal from the program).

Following a successful defense, the final version of the thesis must be submitted to the Graduate School within one month of the defense date. This submission includes bound copies of the thesis, the jury decision form, and the final plagiarism report. Upon request and with the approval of the Graduate School, this deadline may be extended by an additional month. The student's official graduation date is the date the approved final thesis is submitted to the Graduate School.

1.5. Online Student Portal

METU has a variety of online tools. Students can find detailed information about online tools and campus life in student resources. Student portal and OdtüClass are two main online platforms that students will use frequently during their studies.

You can find important links for student certification (93), transcripts (92), and identification card (223) applications, as well as student information (61) and course details (64), through the Student Portal. METU is slowly updating its online tools; you may have access to the same information through different channels. You can access the course catalog and available courses through the Student Portal. OdtüClass will be used in your courses to share course materials, such as lecture notes, homework, and grades.

Program Registration

International students who have recently been admitted to graduate programs should follow this link.

Interactive Course registration

Interactive registration will be available through this link once the system is open. Please follow the academic calendar webpage.

1.6. Performance Assessment

1.6.1. Courses

The students must take 3 Core and 4 Interdisciplinary courses. The courses are evaluated with grades ranging from 0.0 to 4.0; see the grade to letter conversion table below. Students must complete the courses with a grade of 3.0 or higher.

Table 1. Grades

Grade	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.5	0.0
Letter	AA	BA	BB	CB	CC	DC	DD	FD	FF

1.6.2. Master's Thesis Evaluation

Master's Thesis performance is evaluated on a semester-by-semester basis by the academic advisor. Once a student begins registering for the thesis course, they are required to receive a performance grade—either "S" (Satisfactory) or "U" (Unsatisfactory)—at the end of each semester.

This evaluation reflects the student's research progress, commitment, and ability to meet the expectations defined jointly by the advisor and the student. Regular meetings with the advisor, active participation in the research group, fulfilling agreed milestones, and academic maturity all contribute to the semester grade.

Receiving a "U" grade in two consecutive semesters or three semesters in total leads to dismissal from the graduate program, regardless of academic standing in coursework. Therefore, maintaining consistent research performance and open communication with the advisor is crucial for successful thesis completion and program continuation.

1.7. Code of Ethics

Middle East Technical University aims to access knowledge and produce, apply and disseminate it for the social, cultural, economic, scientific and technological development of both our society and humanity by carrying out activities of education, research and community services at universal standards, and to educate individuals who are equipped with this knowledge and at the same time who respect knowledge and the rights of others. In accordance with this aim, all members and students of our university adopt the following **METU Code of Honor:**

> "*As reliable, responsible and honorable individuals, all members of Middle East Technical University embrace only the success and recognition they deserve, and act with integrity in the use, evaluation and presentation of facts, data and documents*."

1.7.1. Core Values

Joining this program, you will become part of the METU family and a METUnian, or as we say in Turkish, "ODTÜ'lü"; therefore, we expect you to embrace **METU's core values.**

Commitment to Campus Heritage
METUnians are devoted to the METU campus as a cultural heritage and stake a claim to it as the campus enables the creation and institutionalization of a common culture with its relatively autonomous location in a human-grown forest, its set-up that collects all its units in a spatial continuity, its spaces and deep-rooted history that have ingrained in social memory, and offers an opportunity for the internalization of an aesthetic sensation with the impact of its unique architecture, landscape, works of art and events that realize within.

Cooperative Individualism
When expressing their individual opinions and values, students, administrative, and academic staff at METU act together, irrespective of their titles, positions, and units, and exhibit a readiness to meet challenges with their libertarian attitudes.

Credibility
METUnians make decisions based on objective data and information, independent of external influences and without allowing conflicts of interest; they fulfill their duties with a sense of responsibility in light of ethical values, scientific criteria, and the rule of law.

High Academic Quality
METUnians embrace the environment which enables the ability to follow scientific developments at an international level and to contribute to such developments, and which motivates the desire for learning and research, the conduct of scientific research and education at high standards in a framework of universal ethical principles, and the community of students and faculty selected, again through high standards, as the fundamental constituents of METU's high academic quality.

Informed Self-Confidence
With an awareness of the boundaries of their knowledge, ability, and authority, METUnians act boldly and resolutely in fulfilling their responsibilities and solving the issues they encounter, and when necessary, self-criticize.

Innovativeness and Leadership
METUnians follow and implement novel methods and approaches in technology, education, research, and management, and develop unique systems, programs, and constructs that serve as models in line with the needs of society and universities.

Investigative Approach
METUnians adopt an investigative/critical approach before making a judgment, while accessing information, conducting scientific research, or when social issues are in question, and come to a conclusion by objectively analyzing cases.

Merit
Embracing the fact that their success and positions are deserved rights as a natural consequence of their competence and perseverance, METUnians safeguard that recruitment and other evaluation processes are conducted on the basis of objective standards and self-efficacy.

Respect for Humanity
While METUnians consider and protect the rights and freedoms of others, they regard diversity as a wealth, oppose any kind of discrimination, and exhibit an unbiased, egalitarian approach based on respect for humanity in all their relations.

Scientific Freedom
METUnians consider the conduct of scientific research and development, as well as education and training activities, without being subject to pressures and influences other than scientific criteria, and the creation of free discussion environments to this end, as the invariable conditions of scientific freedom.

Sensitivity to the Natural Environment
METUnians regard the forest cultivated on the university's land and the ecological diversity within as a value; they attach importance to its conservation and improvement, and, in general, strive for the creation of sensitivity towards the natural environment and the spread of protectionist tendencies.

Social Responsibility
METUnians are responsive to social problems and develop opinions on solutions to them, conduct social responsibility projects, and engage in outreach activities to promote the widespread internalization of science and the scientific approach within society.

1.7.2. Plagiarism and Cheating

Plagiarism is intentionally or unintentionally acquiring and using someone else's ideas and opinions and presenting them as if one's own without making a reference to or citing the source. (**ODTÜ UEAM**). METU will not tolerate any act of Plagiarism. It is the student's responsibility to be aware of the proper handling of scientific knowledge and the potential consequences of violating these rules.

Cheating is described as any attempt or action involving the use of disallowed sources secretly while answering exam questions. Each item below is within the scope of cheating:

1. Peeking at another student's paper during an exam,
2. Peeking at another student's paper during an exam and copying the answers onto one's paper,
3. Talking to other students during the exam,
4. Any kind of sharing of information and sources during an exam (exchanging notes, etc.)
5. Taking exam questions and/or answers out of the exam hall without permission by writing them down or photographing them,
6. Transmitting exam questions to someone else or obtaining answers through cellular phones or any other electronic gadget during the exam,
7. Writing notes concerning the content of the exam on desks and accessories used during the exam, or on one's body or elsewhere,
8. Having someone else do the academic work; doing work to be done individually with other students,
9. Submitting to the course instructor reports/documents such as homework or projects prepared by others as if one's work.