



MIDDLE EAST TECHNICAL UNIVERSITY

Study Guide

Mechanical Engineering

Master's Program

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.

Contents

1. Mechanical Engineering Master's Program.....	3
1.1. Language.....	3
1.2. Duration	3
1.3. Academic Advisor	3
1.4. Curriculum	4
1.4.1. Core Courses	5
1.4.2. Mathematics Requirement	5
1.4.3. Electives.....	5
1.4.4. Ethics Courses.....	6
1.4.5. Thesis Seminar.....	6
1.4.6. Master's Thesis	6
1.5. Online Student Portal and Registration.....	7
Program Registration	7
Interactive Course registration	7
Add-drop period.....	8
1.6. Studying While Working	8
1.7. Performance Assessment	8
1.7.1. Courses.....	8
1.7.2. Master's Thesis Evaluation.....	8
1.8. Code of Ethics.....	9
1.8.1. Core Values.....	9
1.8.2. Plagiarism and Cheating	10

1. Mechanical Engineering Master's Program

Mechanical Engineering lies at the heart of technological innovation, enabling advances in energy, manufacturing, transportation, healthcare, and emerging technologies. As one of the broadest engineering disciplines, it combines fundamental principles of mechanics, thermodynamics, materials science, design, and control to solve complex real-world problems. The Master's Program in Mechanical Engineering provides students with an advanced education that builds upon these foundations while offering opportunities for specialization in diverse research and application areas. Through a wide range of elective courses, research projects, and access to state-of-the-art laboratories, students develop both deep theoretical understanding and practical engineering skills. Graduates are well-prepared for careers in industries such as aerospace, automotive, energy systems, manufacturing, robotics, biomedical engineering, and advanced materials. They are also equipped to pursue academic and research careers, as well as contribute to technology-driven entrepreneurship within METU's vibrant innovation ecosystem.

The program offers a broad selection of graduate-level courses across the diverse fields of Mechanical Engineering, allowing students to tailor their studies according to their interests and career goals. Depending on their chosen focus area, students can gain in-depth knowledge in subjects such as Solid and Fluid Mechanics, Thermodynamics and Energy Systems, Heat Transfer, Manufacturing Technologies, Materials Engineering, Design and Optimization, Control Systems, Robotics, Mechatronics, and Computational Engineering.

In this guide, 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 Mechanical Engineering 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 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.

1.3. Academic Advisor

Each Master's student must have a main academic advisor who is a METU faculty member affiliated with the Mechanical Engineering Department. During the admission process, applicants who successfully pass the initial scientific evaluation stage are provided with a list of available research topics and thesis opportunities proposed by faculty members. Applicants are expected to contact prospective advisors, discuss potential research directions, and reach a mutual agreement regarding supervision and a preliminary thesis topic. Admission to the program is finalized after an advisor–student agreement has been established. This agreement documented through a protocol ([G2](#)). Therefore, applicants who are unable to secure an advisor within the specified deadline cannot be admitted to the program.

The advisor plays a central role throughout the Master's studies. Students select their courses, define their research direction, and develop their thesis work under the guidance of their advisor. In most cases, students conduct their research within their advisor's research group. As students gain experience and explore different areas of Mechanical Engineering, their research interests may evolve. In such cases, students are encouraged to discuss their plans with their advisor and, if necessary, explore opportunities to transition to a more suitable research area or advisor. Applications for changing thesis advisors are evaluated by the Graduate Committee and a recommendation is made to the Department Chair. For the change to be approved, the consent of both the old and new thesis advisors, as well as the compatibility of previously taken courses with the new thesis topic, must be provided. Additionally, the student must have at least two semesters left in the legal period to complete their thesis work. (See [G6](#) form.)

Mechanical Engineering encompasses a wide range of research areas, and some students may benefit from additional expertise beyond their advisor's primary field. For this reason, students may propose a co-advisor when their research topic involves interdisciplinary components or requires specialized knowledge from another area. According to Article 33 of the [Graduate Study Regulations](#), students may have a co-advisor in addition to their main thesis advisor. A co-advisor may be a faculty member from another department at METU, a faculty member from another university, or an experienced researcher from industry holding a doctoral degree. The proposed co-advisor must be approved by the student's advisor and formally appointed according to the procedures specified by the Graduate School. While a co-advisor is not required, students are encouraged to consider this option when it can strengthen the academic and technical aspects of their research.

Throughout the program, the advisor monitors the student's academic progress, course performance, and research activities. The advisor also evaluates the student's progress at regular intervals and provides guidance to support the successful completion of the degree. Details regarding these evaluations are described in the [Performance Assessment](#) section.

1.4. Curriculum

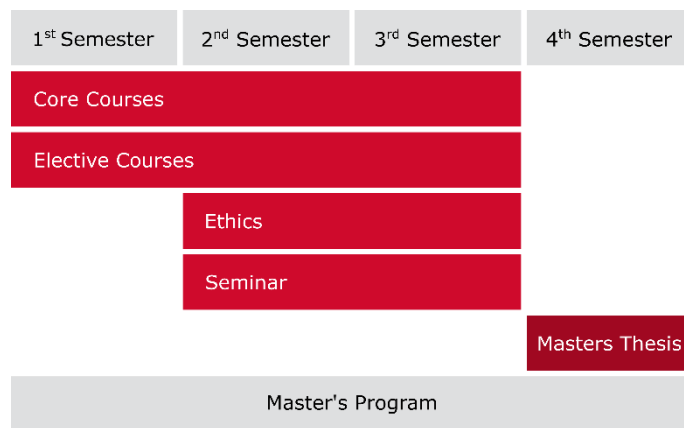


Figure 1. Recommended curriculum of METU Mechanical Engineering for M.Sc. program

The students are advised to follow the curriculum to complete their Master's degree in a timely manner as shown in Figure 1; however, the [Graduate Study Regulations](#) are the binding authority regarding degree requirements and the maximum duration allowed for the completion of coursework and the Master's thesis. In the present context, students must complete all required coursework with a satisfactory grades within a maximum of **4 semesters**. The master's thesis must be successfully defended by the end of the **6th semester**.

The Master's Program in Mechanical Engineering requires the successful completion of **at least 7 credit-bearing courses (1 mathematics course, 2 core courses and 4 elective courses)** corresponding to a minimum of 21 credits, one ethics course, one seminar course, and a Master's thesis. Students must obtain a grade of **CC or higher** in each credit-bearing course and maintain a **cumulative GPA** of at least **3.00**.

The normal course load requirement is **3 courses per semester**; upon the student's request and with the approval of the thesis advisor, this number may be increased to four. For students with an Academic Deficiency Warning or students who have four or fewer remaining courses in their degree program, the course load may be reduced to two courses, and different course load regulations may be applied by the Department Chair for research assistants of the department.

Students are not allowed to withdraw any registered courses. However, they could replace the failed course with another one. The graduate-level that was taken as an elective during the undergraduate program, with a passing grade, cannot be repeated in the graduate program or counted towards the graduate program's course load.

1.4.1. Core Courses

Students must take **at least 2 courses** from the department's core graduate elective course pool:

ME 502 Advanced Dynamics	ME 526 Vibration of Continuous Systems with Comp. Met. (ME 532 Advanced Machinery Vibrations after semester 2022-1)
ME 503 Advanced Gas Dynamics	ME 537 Advanced Engineering Thermodynamics I
ME 504 Advanced Heat Transfer I	ME 541 Plasticity and Computer-Aided Metal Forming
ME 505 Advanced Heat Transfer II	ME 543 Theory of Elasticity
ME 511 Modern Control	ME 547 Introduction to Continuum Mechanics
ME 517 Advanced Fluid Dynamics	

These courses provide advanced foundations in the major disciplinary areas of Mechanical Engineering and help students develop the analytical and theoretical background necessary for graduate-level research.

1.4.2. Mathematics Requirement

All Master's students are required to take ME 521 to satisfy the mathematics requirement of the program. This course provides the mathematical tools and methods commonly used in advanced Mechanical Engineering analysis and research.

1.4.3. Electives

Students are required to take **at least 4 Elective courses**. Among these elective courses must include **at least 2 graduate-level** Mechanical Engineering courses with ME 5XX course codes, excluding ME 521. These courses allow students to develop expertise in their chosen research area.

Mechanical Engineering research often involves knowledge from multiple disciplines. Therefore, with the approval of the Departmental Graduate Programme Committee, students may include **up to 2 courses** selected from the following categories:

- Graduate courses offered by other departments,
- Undergraduate technical elective courses offered by the Mechanical Engineering Department,
- Undergraduate technical elective courses offered by other departments.

Students wishing to include such courses in their programs must submit the required [departmental request forms](#) ("Fourth Year and Non-ME Courses Request Form: [G7](#)") by last day of the registration week with an unofficial academic transcript and course content should be attached to the form. Forms submitted after registration week or missing attachments will not be considered. Graduate-level courses that were previously taken and passed during undergraduate studies cannot be counted toward the graduate degree requirements.

Useful Resources:

- [Undergraduate-level ME 4XX Course Catalog](#) and [Opening Frequency](#)
- [Graduate-level ME 5XX and 7XX Course Catalog](#) and [Opening Frequency](#)

1.4.4. Ethics Courses

Students must successfully complete **ME 599 Ethics** and receive an **S grade** within **the first four semesters** of the program. The course introduces the ethical principles, professional responsibilities, and research practices expected from graduate researchers and engineers.

1.4.5. Thesis Seminar

Students must register for **ME 590 Thesis Seminar** and receive an **S grade** within **the first four semesters** of the program. The seminar course is designed to help students develop scientific communication skills and receive feedback on their research from faculty members and peers.

Students enrolled in ME 590 are required to give a seminar presentation on their thesis topic and the progress of their research. To obtain an S grade, the seminar presentation must be deemed successful by a jury of relevant faculty members. In addition, students must attend the required number of seminars in their topic group, corresponding to **10 seminar presentations**, as determined by the course coordinators.

Successful completion of the seminar course, together with the required coursework and ethics course, marks an important milestone in the Master's program and prepares students for the thesis research and defense process.

1.4.6. Master's Thesis

The Master's Thesis is the culmination of the program and provides students with the opportunity to conduct independent research under the supervision of their thesis advisor. Through the thesis, students are expected to identify a research problem, apply advanced engineering methods, critically evaluate results, and communicate their findings in a scholarly manner.

Students must register for the non-credit **ME 8XX Special Studies** course associated with their thesis advisor every semester. In addition, students must register for **ME 500 M.S. Thesis** beginning from their first semester and continue registration until graduation. Advisor-specific course codes are announced by the department before each registration period.

The thesis will be presented to a thesis jury. According to Article 34 of the [Graduate Study Regulations](#), the composition and appointment of the thesis jury are determined by the relevant department and the Institute of Science. In the Mechanical Engineering Department, the Master's thesis jury consists of five members, including the thesis advisor and at least one jury member from outside METU.

The thesis defense is conducted in English and is open to the university community. After the presentation and question-and-answer 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.

If a thesis is deemed incomplete or insufficient by the jury, the student may be granted an extension of up to 3 months to revise it. A repeated thesis examination will be conducted by the same jury members from the first exam.

Following a successful defense, the final version of the thesis must be submitted to the Institute of Science according to the procedures and deadlines specified by the Institute. The student's official graduation date is the date on which the approved final thesis is submitted to the Institute of Science.

1.5. Online Student Portal and Registration

METU provides a variety of online tools that students will use throughout their studies. Students can find detailed information about online tools, campus services, and student life through the [student resources](#) webpages. The [Student portal](#) and [OdtüClass](#) are the two main online platforms that students will use frequently during their graduate studies.

Through the Student Portal, students can access important services such as student certification (93), transcripts (92), identification card applications (223), student information (61), and course details (64). The Student Portal also provides access to the course catalog and information on available courses. As METU continues to update its online systems, the same information may occasionally be accessible through multiple platforms. OdtüClass is used for course-related activities, including the distribution of lecture notes, homework assignments, announcements, and grades.

Advisor and Thesis Registration

Advisor assignments are maintained through the Student Information System (SIS) using the **MS–PhD Advisor Assignment module (71)**. The advisor information recorded in SIS is used throughout the graduate program for course registration, thesis enrollment, academic advising, and other administrative processes. Students should ensure that their advisor information in the system accurately reflects their current thesis supervision arrangements.

Students should complete the advisor assignment process as early as possible, since thesis registration and several graduate program procedures depend on advisor information recorded in SIS.

Program Registration

Students are required to renew their **registration every semester** during the registration periods announced in the Academic Calendar. Registration renewal typically consists of course registration and advisor approval. Registration is completed only after advisor approval has been received.

International students who have recently been admitted to graduate programs should follow [this link](#) for registration procedures and additional information.

Students are strongly encouraged to follow the [academic calendar](#) carefully, as missing registration deadlines may require additional administrative approval procedures and may delay the completion of the registration process.

Interactive Course registration

Interactive registration is conducted through the university's online registration system and will be available through [this link](#) once the system is open. Students are encouraged to discuss their course selections with their advisors before registration and to follow the [academic calendar](#) webpage for registration dates, add-drop periods, and advisor approval deadlines. Any changes made to a course schedule after advisor approval may require a new approval before registration can be finalized.

Add-drop period

Students who wish to modify their course registrations after the Interactive Registration Period may do so during the Add–Drop Period announced in the [academic calendar](#). Any modifications made during the Add–Drop Period require a new advisor approval before the registration process is finalized.

1.6. Studying While Working

The Mechanical Engineering Department recognizes that some students may pursue graduate studies while employed in industry and supports the continued education of qualified engineers as part of METU’s contribution to Türkiye’s national innovation ecosystem.

Students considering this path should be aware that not all faculty members are willing or able to supervise students who work full-time. Some research groups require regular daytime laboratory work, frequent meetings, or intensive participation in ongoing research activities. Therefore, it is the responsibility of the student to identify and secure an advisor whose expectations are compatible with their employment situation.

Students are expected to attend graduate courses, advisor meetings, and research group activities throughout their studies. Before accepting a position, students should ensure that their employer supports graduate education and provides sufficient flexibility for academic commitments. In particular, students should be able to attend scheduled courses and participate in weekly scientific meetings, seminars, and research group discussions. As a practical guideline, students should expect to dedicate at least one working day per week to academic activities at METU, although some research projects may require a greater time commitment. The normal course load in the program is three courses per semester, and students are expected to register for at least three courses during their first semester. While balancing graduate studies with a full-time engineering position is possible, students should carefully evaluate the associated workload and discuss their plans with both their advisor and employer at an early stage.

According to the Graduate Study Regulations, all coursework must be completed by the end of the fourth semester and the Master’s thesis must be completed by the end of the sixth semester. Experience shows that completing both the coursework and thesis requirements within these limits can be challenging for students working full-time.

Students are therefore strongly encouraged to begin thesis-related research activities as early as possible, maintain regular communication with their advisor, participate actively in research group meetings, and establish realistic milestones for their studies. Early planning is particularly important for students whose thesis work involves laboratory experiments, hardware development, or extensive computational studies. Students are encouraged to discuss these matters with their advisor at an early stage and, when necessary, define a thesis topic that satisfies both academic requirements and industrial constraints.

1.7. Performance Assessment

1.7.1. Courses

The students must take 1 mathematics course, 2 core courses and 4 elective courses. The courses are evaluated with grades ranging from **FF** to **AA**; see the grade to letter conversion in Table 1. Students must complete each course with a grade of **CC or higher**. CGPA of the student must be **at least 3.00** and student must pass ethics and seminar courses with “S” (Satisfactory) grade.

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

1.7.2. 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.

1.8. 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.”

1.8.1. Core Values

Joining this program, you will become part of the METU family and a METUnion, 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.

1.8.2. 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.