Mechanical Engineering MSME

COLLEGE OF ENGINEERING

Learn more about the Master of Science in Mechanical Engineering.

About the Program

The MSME program provides students who already hold an undergraduate degree in mechanical engineering or a closely related field with the credentials and background needed to pursue a career in industrial or academic research and development. Additionally, the program equips students from diverse engineering or basic science backgrounds with the fundamental technical expertise in mechanical engineering necessary to work in interdisciplinary fields such as bioengineering or materials engineering. The program also offers currently employed professionals a means to further their technical capabilities through part-time study.

Time Limit for Degree Completion: 5 years

Campus Location: Main

Full-Time/Part-Time Status: The degree program can be completed on a full- or part-time basis.

Interdisciplinary Study: The program encourages interdisciplinary research with other branches of engineering as well as with various departments of the College of Science and Technology and the Lewis Katz School of Medicine. Faculty are also collaborating with investigators in the Department of Civil and Environmental Engineering on water turbulence studies; in the Department of Electrical and Computer Engineering on heat dissipation in microelectronic components; and in the Department of Physics on nanotechnology research.

Areas of Specialization: Specialized courses and research are offered in:

- Robotics and Artificial Intelligence
- Biofluidics and Targeted Drug Delivery
- Injury and Tissue Biomechanics
- Materials Engineering and Processing
- Acoustics and Metamaterials
- Composites and Smart Materials
- Dynamic Systems and Data Driven Controls
- Electrical Vehicles Safety and Crashworthiness
- Computational Nanomechanics

For the MSME program, students may also choose between three tracks:

1. The Thesis Track is intended for students pursuing advanced research and includes 24 credits of didactic coursework, 3 credits of Project (MEE 9995), and 3 credits of Thesis (MEE 9996).
2. The Project Track introduces students to applied research and includes 27 credits of didactic coursework and 3 credits of Project (MEE 9995).
3. The Coursework Track provides students with an advanced engineering background for their future in the engineering profession through 30 credits of didactic coursework.

In the first term, the student and the Mechanical Engineering (ME) Graduate Program Coordinator establish a graduate Plan of Study that outlines all required courses and the sequence for the student to follow. This form is used to track the student's progress as the various benchmarks in the program are completed. Once established, any revisions to the Plan of Study require approval in advance. However, if considering whether to change one's track, the student should note that:

- "Thesis" credits (MEE 9996) can only be applied toward the Thesis MSME Track and cannot be applied to either the Project or Coursework Tracks.
- "Project" credits (MEE 9995) can be applied toward the Thesis and Project MSME Tracks but cannot be used for the Coursework Track.

Job Prospects: Graduates with the MSME in Mechanical Engineering are employed in high-tech industries and government laboratories in design, analysis and applications. Typical employers include manufacturing companies; pharmaceutical and biotechnology companies; companies involved in research and development in fluid flow and heat transfer; computer-aided designers and manufacturers; computer technology firms; and government offices such as the U.S. Patent and Trademark Office. Students who complete an MSME with a thesis are prepared to enter a doctoral program.

Non-Matriculated Student Policy: Up to 9 credits of graduate Engineering coursework may be taken at Temple University on a non-matriculated basis and subsequently applied to the MSME degree upon admission. If the applicant's undergraduate GPA was less than 3.0, a GPA of 3.25 or better is required on this non-matriculated graduate coursework to receive an admissions exception. Consequently, the ME Graduate Program Director may

encourage those with an undergraduate GPA less than 3.0 to take their first three graduate courses prior to making formal application to the MSME program. (See the relevant Graduate School policies on special admission procedures for non-matriculated students: 02.23.11.03 and 02.24.19.)

Financing Opportunities: Three forms of financial aid are offered to graduate students:

1. Teaching Assistantship (TA): TA awards are made solely by the Department and require the awardee to work 20 hours per week in support of the Department's undergraduate programs. The TA is compensated with a 9-month stipend, a basic health-insurance plan, and 9 credits per term of tuition remission.
2. Research Assistantship (RA): Individual ME faculty confer RA awards, using their research funds, upon students who appear well-qualified to carry out the research. Typically, this faculty member becomes the RA's Thesis advisor. The RA normally works up to 20 hours per week and is compensated with a stipend, basic health insurance, and tuition remission.
3. Fellowships: These highly competitive University-wide grants are typically awarded only to PhD-program applicants.

Admission Requirements and Deadlines

Application Deadline:

Fall:

- March 1 (International)
- June 1 (Domestic)

Spring: November 1

Applications are processed on a continual basis. Late applications may be considered for admission. Ordinarily, the applicant is informed of an admissions decision within 4 to 6 weeks of receipt of all supporting application documents.

APPLY ONLINE to this graduate program.

Review tuition and financial assistant deadlines to ensure financial aid consideration for the intended term of study.

Applicants who plan to matriculate full-time are automatically considered for financial aid awards so no separate application for financial aid is required.

Both admissions and financial aid award decisions originate in the Department of Mechanical Engineering (ME). Applicants are encouraged to contact the ME Graduate Program Director for advice and consultation in the application process.

Letters of Reference:
Number Required: 3

From Whom: Letters of recommendation should be obtained from college or research faculty who are familiar with the applicant's competency. If the applicant has an established career in engineering, one of the letters should be provided by the applicant's immediate supervisor. Any applicant who has been out of school long enough that relevant academic reference letters appear impractical should provide recommendations by the applicant's previous or current immediate supervisor(s).

Coursework Required for Admission Consideration: Students who are not adequately prepared for advanced courses may be required to complete prerequisite coursework. The Mechanical Engineering Department determines the necessary prerequisites on a case-by-case basis.

Bachelor's Degree in Discipline/Related Discipline: A bachelor's degree in Mechanical Engineering is the preferred prerequisite degree. However, students who have earned a bachelor's degree in a related field are encouraged to apply, with the understanding that remedial preparatory courses may be a pre-condition of admission to the MSME program.

University regulations stipulate that the applicant must have earned a 3.0 grade-point average on a 4.0 scale in their undergraduate studies, but admission exceptions are made for a variety of circumstances. (See Graduate School Policy 02.23.11.03.) The ME Graduate Program Director helps the applicant navigate the admission possibilities, including the "Non-Matriculated Student Policy" option.

Official transcripts from all institutions of higher education attended, whether or not a degree was awarded, must be submitted. International applicants submit official transcripts or official NACES-accredited evaluation documentation that validates completion and conferral of a degree, diploma and/or certificate. All applicants must ensure transcripts and/or NACES-accredited documentation are sent directly from the institution(s) or NACES-accredited evaluation agency via email to gradengr@temple.edu or to the Temple University College of Engineering, 1947 N. 12th Street, Philadelphia, PA 19122-6077.

Statement of Goals: Describe your relevant technical experiences and career goals in one to two pages.

Standardized Test Scores:
GRE: Optional. If reported, scores that are not more than 5 years in advance of the application date are sent to test code 2945. (See Graduate School Policy 02.23.12.)

Applicants who earned their baccalaureate degree from an institution where the language of instruction was other than English, with the exception of those who subsequently earned a master's degree at a U.S. institution, must ensure official scores are reported directly by the testing agency for a standardized test of English and meet one of these minimums:

- TOEFL iBT: 79
- IELTS Academic: 6.5
- PTE Academic: 53
- Duolingo: 110

Resume: Current resume required.

Transfer Credit: Graduate credits taken at an accredited institution prior to matriculation may be transferred into the MSME program. In order to transfer, the courses must be equivalent to courses offered at Temple in the student's area of study and research, and the grades must be "B" or better. The maximum number of credits a student may transfer is 6. (See Graduate School Policy 02.24.21.)

Program Requirements

General Program Requirements:
Number of Credits Required Beyond the Baccalaureate: 30

Required Courses:

Thesis Track

Code	Title	Credit Hours
Core Courses		
ENGR 5117	Experimental Methods	3
Select one course from the following:		3
ENGR 5011	Engineering Mathematics I	
ENGR 5012	Engineering Mathematics II	
Select one additional course from the following:		3
ENGR 5314	Continuum Mechanics	
ENGR 5334	Dynamical Systems	
MEE 5117	Finite Element Analysis	
Electives [1]		**15**
Research Courses		
MEE 9995	Project	3
MEE 9996	Thesis	3
Total Credit Hours		**30**

1 Coursework may include up to, but no more than, 3 credits of MEE 9182 Independent Study I or 3 credits of MEE 9991 Directed Research. Furthermore, students who wish to take graduate coursework outside the College of Engineering in one of Temple University's other schools or colleges need to obtain the appropriate written approvals on their Plan of Study form.

Project Track

Code	Title	Credit Hours
Core Courses		
ENGR 5117	Experimental Methods	3
Select one course from the following:		3
ENGR 5011	Engineering Mathematics I	
ENGR 5012	Engineering Mathematics II	
Select one additional course from the following:		3
ENGR 5314	Continuum Mechanics	
ENGR 5334	Dynamical Systems	
MEE 5117	Finite Element Analysis	

Electives [1]		**18**
Research Course		
MEE 9995	Project	3
Total Credit Hours		**30**

1 Coursework may include up to, but no more than, 3 credits of MEE 9182 Independent Study I or 3 credits of MEE 9991 Directed Research. Furthermore, students who wish to take graduate coursework outside the College of Engineering in one of Temple University's other schools or colleges need to obtain the appropriate written approvals on their Plan of Study form.

Coursework Track

Code	Title	Credit Hours
Core Courses		
ENGR 5117	Experimental Methods	3
Select one course from the following:		3
ENGR 5011	Engineering Mathematics I	
ENGR 5012	Engineering Mathematics II	
Select one additional course from the following:		3
ENGR 5314	Continuum Mechanics	
ENGR 5334	Dynamical Systems	
MEE 5117	Finite Element Analysis	
Electives [1]		**21**
Total Credit Hours		**30**

1 Coursework may include up to, but no more than, 3 credits of MEE 9182 Independent Study I or 3 credits of MEE 9991 Directed Research. Furthermore, students who wish to take graduate coursework outside the College of Engineering in one of Temple University's other schools or colleges need to obtain the appropriate written approvals on their Plan of Study form.

Culminating Events:

Thesis Track:
Students are required to complete eight courses (24 total credits) at 5000 or above levels: three credits of project (MEE 9995), and three credits of master thesis research (MEE 9996). Of the eight didactive courses, students must complete ENGR 5011 (Engineering Mathematics I), ENGR 5117 (Experimental Methods) and at least four other courses offered by the ME department or the College of Engineering. Coursework may include up to, but no more than, 3 credits of MEE 9182 Independent Study I or 3 credits of MEE 9991 Directed Research. Students who wish to take graduate coursework outside the College of Engineering in one of Temple University's other schools or colleges need to obtain the appropriate written approvals on their Plan of Study form.

Project Track:
Students are required to complete nine courses (27 total credits) at 5000 or above levels, and three credits of project course (MEE 9995). Of the nine didactic courses, students must complete ENGR 5011 (Engineering Mathematics I), ENGR 5117 (Experimental Methods) and at least five other courses offered by the ME department or the College of Engineering. Coursework may include up to, but no more than, 3 credits of MEE 9182 Independent Study I or 3 credits of MEE 9991 Directed Research. Students who wish to take graduate coursework outside the College of Engineering in one of Temple University's other schools or colleges need to obtain the appropriate written approvals on their Plan of Study form.

Coursework Track:
Students are required to complete 10 courses (30 total credits) at 5000 or above levels. Of the 10 courses, students must complete ENGR 5011 (Engineering Mathematics I), ENGR 5117 (Experimental Methods) and at least six other courses offered by the ME department or the College of Engineering. Coursework may include up to, but no more than, 3 credits of MEE 9182 Independent Study I or 3 credits of MEE 9991 Directed Research. Students who wish to take graduate coursework outside the College of Engineering in one of Temple University's other schools or colleges need to obtain the appropriate written approvals on their Plan of Study form.

Accelerated Programs

Undergraduate students may opt to pursue an accelerated +1 program, enabling them to complete both a bachelor's degree and master's degree in less time than the traditional route.

The accelerated pathway for the Mechanical Engineering MSME is available to students pursuing the degree in Mechanical Engineering BSME.

Cohort Code: XMSME

Minimum Cumulative GPA: 3.00

Graduate Courses Approved to Count for Both Undergraduate and Graduate Degrees

Code	Title	Credit Hours
Four courses from MEE 5000+ and/or ENGR 5000+, with advisor approval [1]		12

[1] Course selection could also include BIOE 5431, BIOE 5441, EMGT 5634, or EMGT 5635.

Suggested Academic Plan

Course	Title	Credit Hours
Year 3		
Spring		
One MEE 5000+ course		3
	Credit Hours	**3**
Year 4		
Fall		
One MEE 5000+ course		3
One MEE 5000+ course		3
	Credit Hours	**6**
Spring		
One MEE 5000+ course		3
	Credit Hours	**3**
	Total Credit Hours	**12**

Admissions Criteria

Candidates for the +1 program must:

- have a cumulative GPA of at least 3.00 by the end of the 5th semester.
- submit an application before the end of the 5th semester of study.
- submit the following:
  - recommendation letters from two faculty members and at least one must be from a faculty member in the relevant department; these letters can be submitted in a sealed envelope to Melissa Valdes or e-mailed directly to her at melissa.valdes@temple.edu.
  - personal statement.
  - resume.
- complete required coursework as outlined in the application.

Junior applicants must be able to complete their undergraduate degree in two years from admission into the +1 program. Senior applicants must be able to complete their undergraduate degree in one year from admission into the +1 program.

Application: https://engineering.temple.edu/admissions/undergraduate-admissions/1-bachelors-masters-accelerated-degree

Contact Information

Melissa Valdes, Assistant Dean for Undergraduate Studies
melissa.valdes@temple.edu

Learn more about the +1 program in Mechanical Engineering MSEE.

Contacts

Program Web Address:

https://www.temple.edu/academics/degree-programs/mechanical-engineering-ms-en-me-msme

Department Information:

Dept. of Mechanical Engineering
ATTN: ME Programs, College of Engineering
1947 N. 12th Street
Philadelphia, PA 19122-6077
gradengr@temple.edu
215-204-7800

Submission Address for Application Materials:

https://apply.temple.edu/ENGINEERING/Account/Login

Department Contacts:

Admissions:
Elizabeth Spadaro
elizabeth.jung@temple.edu
215-204-6760

Graduate Program Coordinator, ME:
Fei Ren, PhD
fei.ren@temple.edu
215-204-9593

Chairperson, ME:
Kurosh Darvish, PhD
kurosh.darvish@temple.edu
215-204-4307