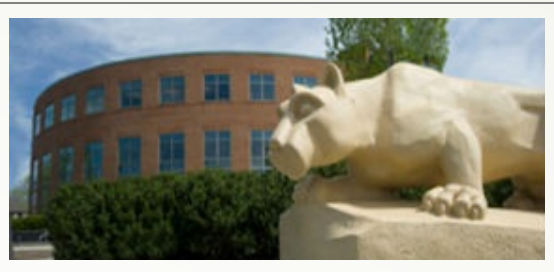


Master of Science in Mechanical Engineering

The Master of Science in Mechanical Engineering (MS ME) degree program will provide students with an educational foundation that prepares them for leadership roles in engineering research and product design/development.

Students will learn to read, interpret, and critically assess literature in specialized fields of mechanical engineering, and then conceive, develop, and conduct original research leading to useful applications in materials, manufacturing, thermo-fluids, control systems and design areas. Additionally, students will be mentored to prepare research proposals and technical reports, present research work in seminars, and publish in peer-reviewed journals. In addition, the MS ME program offers flexible schedules ideal for working professionals, as well as internships and opportunities to work with faculty on research through assistantships and part-time positions.



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PennState
Harrisburg

**School of Science,
Engineering, and Technology**



**Master of Science in
Mechanical Engineering**

Curriculum

The M.S. in Mechanical Engineering (ME) degree program is designed for students to gain advanced knowledge for research, analysis, and design in mechanical engineering. It has established a six-year time limit for completion of the M.S. degree. Extension beyond six years requires the approval of the ME Graduate Faculty. The student must maintain a minimum grade point average (GPA) of 3.00 or better on a 4.00 scale in 400-, 500-, and 800-level courses listed on her/his Plan of Study.

Areas of Concentration

The program is structured into three areas of concentration in order to take full advantage of the specialty areas of expertise of the Mechanical Engineering graduate faculty:

- Thermo-Fluids Science
- Mechanical Science
- Materials Science

M.S. ME Program Requirements

Course Type	Course Number or Area	Credits
Mathematics	EMCH 524A	3
Concentration area	Thermo-Fluids Science, Mechanical Science, or Materials Science	9
Electives (i)	Variable, but including at least one outside concentration area	12
Colloquium	ME 590	1
Thesis/scholarly paper research	ME 600	6
Total Credits		31

Note:

- The required course credits must be completed with a grade point average of 3.00 or higher.
- At least 18 credits must be earned in 500- and 600-level courses.
- Preparatory course(s) required for teaching assistants (such as ENGR 888), remedial courses, and any courses required in our undergraduate program are **not counted** toward degree requirements for the M.S. degree.

Visit for complete details.

Courses

General Courses

- EMCH 524A Mathematical Methods in Engineering (3)
- ME 444 Engineering Optimization (3)
- ME 461 Finite Elements in Engineering (3)
- ME 596 Individual Studies (1-9)
- ME 600 Thesis Research (3)

Thermo-Fluids Science Courses

- ME 401 Refrigeration and Air Conditioning (3)
- ME 408 Energy Systems (3)
- ME 420 Compressible Flow I (3)
- ME 427 Incompressible Aerodynamics (3)
- ME 431 Internal Combustion Engines (3)
- ME 504 Advanced Engineering Thermodynamics (3)
- ME 512 Heat Transfer - Conduction (3)
- ME 521 Foundations of Fluid Mechanics I (3)
- ME 523 Numerical Solutions Applied to Heat Transfer and Fluid Mechanics Problems (3)

Mechanical Science Courses

- ME 445 Microcomputer Interfacing for Mechanical Engineers (3)
- ME 446 Reliability and Risk Concepts in Design (3)
- ME 469 Metallic Manufacturing Processes (3)
- ME 470 Analysis and Design in Vibration Engineering (3)
- ME 481 Introduction to Computer-Aided Analysis of Machine Dynamics (3)
- ME 545 Mechatronics (3)
- ME 554 Digital Process Control (3)
- ME 560 Solid Mechanics (3)
- ME 577 Stochastic Systems for Science and Engineering (3)

Materials Science Courses

- MATSE 401 Thermodynamics of Materials (3)
- MATSE 419 Computational Materials Science and Engineering (3)
- MATSE 436 Mechanical Properties of Materials (3)
- MATSE 507 (BIOE 517) Biomaterials Surface Science (3)
- MATSE 510 (CHE 510) Surface Characterization of Materials (3)
- MATSE 564 (EMCH 535) Deformation Mechanisms in Materials (3)
- MATSE 565 Metals in Electronics (3)
- 500 or 800-level courses in ENGINEERING, COMPUTER SCIENCE, or MATHEMATICS (must be preapproved)

Program Requirements for Admission

Requirements	More Information
GPA	An undergraduate cumulative grade-point average of 3.0 or better on a 4.0 scale.
Education	Applicants should have undergraduate degrees in engineering or engineering technology from an accredited university.
Supporting Materials	<ul style="list-style-type: none"> ✓ Three (3) letters of reference, especially those from faculty who can evaluate academic potential. ✓ A personal statement of technical interest, goals, and experiences. ✓ Graduate Record Examination (GRE) test scores. ✓ Statement of interest in graduate assistantship, if desired.

Admission into this program will be granted only to candidates who demonstrate high potential for success in graduate studies.