

The Master of Science in Mechanical Engineering: With Thesis Program Planning Sheet



Student Name: _____ BU ID# _____
 Email Address: _____
 Advisor Name: _____
 Expected Graduation Date: _____

1) Concentration Requirement - 12 credits

Concentration Area: _____

<u>Course #</u>	<u>Course Name</u>	<u>Credits</u>	<u>Semester/Year</u>	<u>Grade</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

2) Mathematics Requirement - 4 credits

<u>Course #</u>	<u>Course Name</u>	<u>Credits</u>	<u>Semester/Year</u>	<u>Grade</u>
_____	_____	_____	_____	_____

3) Engineering and Physical Science Requirement - 8 credits

<u>Course #</u>	<u>Course Name</u>	<u>Credits</u>	<u>Semester/Year</u>	<u>Grade</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

4) Thesis Research - 8 credits

<u>Course #</u>	<u>Course Name</u>	<u>Credits</u>	<u>Semester/Year</u>	<u>Grade</u>
ME 954	Masters Research	4	_____	_____
ME 954	Masters Research	4	_____	_____

Approved By:

 Advisor Signature Date

 Student Signature Date

The Master of Science in Mechanical Engineering Curricular Requirements

The program requires 32 credit hours at the 500-level or above. At least 20 credits must be MechE courses. At least 24 credits must be taken at Boston University. To graduate, a cumulative grade point average of at least 3.0 (B) must be attained. If necessary, student can take more than 32 credits and drop the lowest grade. Grades of C- or lower are not acceptable for master's degrees under any circumstance. Successful completion of a 3-credit course in either the College of Arts and Sciences or the Questrom School of Business does not obviate the need to complete 32 credits. Students are permitted to take a single course multiple times to achieve the GPA requirement, but will only receive 4 credits if used against the degree requirements.

1. Core Requirement (12 credits)

Students are encouraged to fulfill this requirement by choosing three courses (12 credits) from one of the six Concentration Areas below (Prerequisites for courses are listed on the Boston University Bulletin.) These guidelines are intended to provide each student with core competency in a specific area of mechanical engineering. However, a student may instead elect to fulfill the Core Requirement with an alternative selection of three graduate-level MechE courses that constitute an individually designed program of study. This program of study must be approved by the student's advisor and by the Director of Master's Programs prior to initiation.

Concentration Areas

Acoustics	
ME 515*	Vibration of Comp. Mech. Systems
ME 520*	Acoustics I
ME 521*	Continuum Mechanics
ME 526*	Simulation of Physical Processes
ME 538*	Intro to Finite Element Analysis
ME 720	Acoustics II
ME 721	Acoustic Bubble Dynamics

Solid Mechanics/ Materials	
ME 503*	Kinetic Processes in Materials
ME 504*	Polymers & Soft Materials
ME 505*	Thermo. & Statistical Mechanics
ME 508	Computational Methods in Materials Sci.
ME 515*	Vibration of Complex Mech. Systems
ME 521*	Continuum Mechanics
ME 524	Skeletal Tissue Mechanics
ME 538*	Intro to Finite Element Analysis
ME 545*	Electrochem. of Fuel Cells and Batteries
ME 580*	Theory of Elasticity
ME 582	Mechanical Behavior of Materials
ME 781	Electroceramics
ME 788	Soft Tissue Biomechanics

Thermofluid Science & Energy	
ME 505*	Thermo. & Statistical Mechanics
ME 516*	Stat. Mech. Concepts in Engineering
ME 519	Theory of Heat Transfer
ME 521	Continuum Mechanics
ME 527	Transport Phenomena in Mat. Proc.
ME 533	Energy Conversion
ME 541	Classical Thermodynamics
ME 542	Advanced Fluid Mechanics
ME 543*	Sustainable Power Systems
ME 702	Computational Fluid Dynamics
ME 709*	Turbulent Flows

Dynamics, Systems, and Controls	
ME 501*	Dynamic System Theory
ME 507*	Process Modeling and Control
ME 510*	Production Systems Analysis
ME 515*	Vibration of Comp. Mech. Systems
ME 526*	Simulation of Physical Processes
ME 544*	Networking the Physical World
ME 570	Robot Motion Planning
ME 701	Optimal & Robust Control
ME 704*	Adaptive Control of Dynamical Sys.
ME 710*	Dyn. Program. & Stochastic Control
ME 714*	Adv. Stochastic Modeling & Simul.
ME 724*	Adv. Optim, Theory & Methods
ME 725	Queuing Systems
ME 733*	Discrete Event & Hybrid Systems
ME 734	Hybrid Systems
ME 740*	Vision, Robotics & Planning
ME 762*	Nonlinear Systems & Control
ME 766	Adv. Scheduling Models & Methods

Biomechanics/Biomaterials	
ME 504*	Polymers & Soft Materials
ME 521	Continuum Mechanics
ME 524	Skeletal Tissue Mechanics
ME 528	Biological Physics
ME 726*	Fundamentals of Biomaterials
ME 727*	Principles and Applications of Tissues
ME 788	Soft Tissue Biomechanics

MEMS/Nanotechnology	
ME 504*	Polymers & Soft Materials
ME 508	Computational Methods in Materials Science
ME 516*	Statistical Mech. Concepts in Engineering
ME 521	Continuum Mechanics
ME 546	Micro/Nanofluidics
ME 555*	MEMS: Fabrication & Materials
ME 560*	Machine Design & Instrumentation
ME 579*	Microelectronic Device Manufacturing
ME 778	Micromachined Transducers

*Courses offered every year.

2. Mathematics Requirement (4 credits)

Each student must take one course from the following list:

EK 500	Probability with Statistical Applications
EK 501	Mathematical Methods I: Linear Algebra and Complex Analysis
EC 505	Stochastic Processes
MA 511	Introduction to Analysis I
MA 555	Numerical Analysis I
MA 561	Methods of Applied Mathematics I
ME 512	Engineering Analysis
ME 566	Advanced Engineering Mathematics
PY 501	Mathematical Physics

3. Engineering and Physical Science Requirement (8 credits)

Each student must complete two graduate-level courses in engineering and/or physical sciences to fulfill the Elective Requirement. These courses may be taken in any department or division of the College of Engineering or in the College of Arts and Sciences. (Note, however, that most CAS courses are 3 credits.) The advisor's approval must be obtained to count these two courses towards the Elective Requirement.

4. Thesis Research (8 credits)

Each student must complete a minimum of two semesters of ME 954, Masters Research. Typically, the first semester is used to conduct thesis research and the second semester is dedicated to writing a thesis. Students may require additional semesters of ME 954 to complete their thesis, but only 8 credits may be used against the degree.

5. Engineering Management

Each student may take a maximum of two courses from the following list of courses in engineering management:

ME 502	Invention
ME 517	Product Development
ME 525	Technology Ventures
ME 583	Product Management
ME 584	Manufacturing and Supply Chain Strategy