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

**Student Name:** ______________________________________  
**BU ID:** ____________________________________________  
**Email Address:** ______________________________________  
**Advisor Name:** _________________________________  
**Expected Graduation Date:** ________________________

Fill out sheet below with the courses you will use fulfill your MS requirements.  
All instructions and explanations can be found on succeeding pages.

### 1) Focus Area Requirement – 12 credits

Focus Area: ___________________________________________

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<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Credits</th>
<th>Semester/Year</th>
<th>Grade</th>
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### 2) Breadth Requirement – 4 credits

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### 3) Engineering, Math and Physical Science Requirement – 8 credits

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### 4) Thesis Research | MS Thesis – 8 credits

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<th>Semester/Year</th>
<th>Grade</th>
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<tr>
<td>ME954</td>
<td>MS Thesis</td>
<td>4.0</td>
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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 ME 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. Focus Area Requirement (12 credits)
Each focus area has one course requirement that can be satisfied by the courses indicated on last page. The courses that can be used to satisfy the requirement for each focus area are listed with a ^ symbol. The ^ are provided as recommendations for courses to be taken in each focus area. At least one course with a ^ must be taken. In some focus areas, more than three courses have a ^ because some of the focus area requirements are not taught yearly.

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 choose a more general course of study through an alternate selection of three graduate-level ME 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.

2. Breadth Requirement (4 credits)
Each student must take one course from a focus area different from that used to fulfill the Focus Area Requirement. A course in this category is not in this focus area, but it is helpful to support a focus area with additional information.

3. Engineering, Math and Physical Science Requirement (8 credits)
Each student must complete two graduate-level courses in any engineering course, or from the math courses listed below or from any physical science course, all of which need to be 500-level or above. These courses may be taken in any department or division of the College of Engineering or in the College of Arts and Sciences. The advisor must approve the two courses used to fulfill this requirement.

Acceptable (but not required) math courses* are:

EK500 Probability with Statistical Applications
EK501 Mathematical Methods I: Linear Algebra and Complex Analysis
EC505 Stochastic Processes
MA511 Introduction to Analysis I
MA555 Numerical Analysis I
MA561 Methods of Applied Mathematics I
ME512 Engineering Analysis
ME542 Advanced Fluid Mechanics
ME566 Advanced Engineering Mathematics
PY501 Mathematical Physics
*Note: If there is a math course a student wishes to take that is not on the list above, please reach out to the Director of Master's Programs for approval.

4. MS Thesis | Thesis Research (8 credits)
Each student must complete a minimum of two semesters of ME 954, MS Thesis. 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 towards the degree.

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

   ME502       Invention
   ME584   Manufacturing and Supply Chain Strategy
## Focus Areas

**NOTE: Courses with a * are taught yearly**  
^Courses that are required for the focus area

### Solid Mechanics
- ME515* Vibration of Complex Mech. Systems
- ME524 Skeletal Tissue Mechanics
- ME538* Intro to Finite Element Analysis
- ME580** Theory of Elasticity
- ME582 Mechanical Behavior of Materials
- ME788 Soft Tissue Biomechanics

### Materials
- ME503** Kinetic Processes in Materials
- ME504* Polymers and Soft Materials
- ME505** Thermo & Statistical Mechanics
- ME508 Computational Methods in Materials Science
- ME545 Electrochem. Of Fuel Cells and Batteries

### Biomechanics/Biomaterials
- ME500 (Albro) Molecular Transport in Connective Tissues
- ME504* Polymers and Soft Materials
- ME526* Simulation of Physical Processes
- ME526^ Simulation of Physical Processes
- ME526** Skeletal Tissue Mechanics
- ME538* Intro to Finite Element Analysis
- BE549 Structures and Function of the Extracellular Matrix
- SAR HP565 Biomechanics of Human Movement
- ME580* Theory of Elasticity
- ME726^/BE526 Fundamentals of Biomaterials
- ME727* Principles and Applications of Tissues
- ME788^ Soft Tissue Biomechanics

### Acoustics
- ME515** Vibration of Comp. Mech. Systems
- ME520** Acoustics I
- ME521* Continuum Mechanics
- ME526* Simulation of Physical Processes
- ME538* Intro to Finite Element Analysis
- ME720^ Acoustics II
- ME721^ Acoustic Bubble Dynamics

### Energy & Thermofluid Science
- ME505** Thermo. & Statistical Mechanics
- ME519^ Theory of Heat Transfer
- ME521** Continuum Mechanics
- ME527^ Transport Phenomena in Mat. Proc.
- ME533 Energy Conversion
- ME541 Classical Thermodynamics
- ME542** Advanced Fluid Mechanics
- ME543* Sustainable Power Systems

### MEMS/Nanotechnology
- ME504* Polymers & Soft Materials
- ME506 Engineering Device Physics
- ME508 Computational Methods in Materials Science
- ME516* Statistical Mech. Concepts in Engineering
- ME521* Continuum Mechanics
- ME546^ Micro/Nanofluidics
- ME555^ MEMS: Fabrication & Materials
- ME560* Machine Design & Instrumentation
- ME576 Nanomanufacturing and Hierarchical Materials
- ME579^ Nano/Microelectronic Device Technology
- ME778 Micromached Transducers

### Dynamics, Systems, and Controls
- EK505 Intro to Robotics & Autonomous Systems
- ME501** Dynamic System Theory
- ME510* Production Systems Analysis
- ME515** Vibration of Comp. Mech. Systems
- ME526* Simulation of Physical Processes
- ME544* Networking the Physical World
- ME568 Soft Robotics
- ME570^ Robot Motion Planning
- ME571 Medical Robotics
- ME701 Optimal & Robust Control
- ME710* Dyn. Program. & Stochastic Control
- ME724* Adv. Optim, Theory & Methods
- ME725 Queuing Systems
- ME733* Discrete Event & Hybrid Systems
- ME734 Hybrid Systems
- ME740* Vision, Robotics & Planning
- ME762^ Nonlinear Systems & Control
- ME766 Adv. Scheduling Models & Methods

### Manufacturing
- ME502* Invention
- ME506 Engineering Device Physics
- ME510** Production Systems Analysis
- ME518* Product Quality
- ME526* Simulation of Physical Processes
- ME535 Green Manufacturing
- ME537^ Product Realization
- ME538* Intro to Finite Element Analysis
- ME555* MEMS: Fabrication & Materials
- ME557* Additive Manufacturing
- ME560 Precision Machine Design & Instrumentation
- ME579^ Nano/Microelectronic Device Technology
- ME584^ Manufacturing and Supply Chain Strategy
- ME691* Advanced Product Design
- ME692 Advanced Product Design

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- ME502* Invention
- ME506 Engineering Device Physics
- ME510** Production Systems Analysis
- ME518* Product Quality
- ME526* Simulation of Physical Processes
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- ME537^ Product Realization
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- ME692 Advanced Product Design

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Last updated 11/23/2022