Boston University  
College of Engineering  
Division of Systems Engineering  
MS (Non-Thesis) Program Planning Sheet

<table>
<thead>
<tr>
<th>Student Name:</th>
<th>Advisor Signature:</th>
<th>BU ID</th>
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</table>

MS (Non-Thesis) students must take 32 credits, all of which must be at the 500 level or higher. The coursework requirements for the MS (Non-Thesis) are as follows: **Core** (3 courses), **Concentration** (2 courses), and **Elective** (3 courses). Among the 32 credits, the **Practicum Requirement** is satisfied by up to two courses from the approved list. Electives are chosen, with advisor approval, to meet an individual student’s academic needs. MS students must also satisfy the advanced technical course requirement by taking at least two 700-level or higher courses from the Systems courses below, on the reverse, or courses approved by the Systems Engineering Graduate Committee in advance. MS students must maintain a cumulative GPA of 3.00 to remain in good academic standing and to graduate. All graduate courses are counted in the GPA. Grades of “C-” or lower are not acceptable for the MS degree. **NOTE:** Courses are color coded to indicate when they are usually offered, in Fall, Spring, or both semesters (subject to change). Courses may be offered every two years.

## CORE
Select one course from each of the following three Core areas (12 credits).

### A. Computational and Systems Biology
- ENG BE 505 Molecular Bioengineering I
- ENG BE 561 DNA and Protein Sequence Analysis
- ENG BE 562 Computational Biology: Genomes, Networks, Evolution
- ENG BE 567 Nonlinear Dynamics in Biological Systems
- ENG BE 747 Adv. Signals and Systems Analysis for Biomedical Eng
- ENG BE 760 Structural Bioinformatics
- ENG BE 767 Protein and Genomic Systems Engineering
- ENG BE 777 Computational Genomics I

### B. Control Systems
- ENG SE/EC/ME 501 Dynamic Systems Theory
- ENG ME/MS 507 Process Modeling and Control
- ENG ME 560 Precision Machine Design and Instrumentation
- ENG ME 570 Robot Motion Planning
- ENG SE/EC/ME 701 Optimal and Robust Control
- ENG EC 702 Recursive Estimation and Optimal Filtering
- ENG SE/EC/ME 704 Adaptive Control
- ENG SE/EC/ME 710 Dynamic Programming and Stochastic Control
- ENG SE/EC/ME 733 Discrete Event and Hybrid Systems
- ENG SE/ME/EC 734 Hybrid Systems
- ENG SE/ME 740 Vision Robotics and Planning
- ENG SE/ME 762 Nonlinear Systems and Control

### C. Energy and Environmental Systems
- CAS EC 513 Game Theory (both semesters)
- ENG SE/EC/ME 543 Sustainable Power Systems
- ENG ME/MS 545 Electrochemistry of Fuel Cells and Batteries
- CAS EC 571 Energy and Environmental Economics
- CAS EC 572 Public Control of Business
- ENG EC/MS 573 Solar Energy Systems
- GSM GE 712 Regional Energy Modeling
- GRSC EC 716 Game Theory
- GSM OM 845 Clean Technology Business Models

### D. Network Systems
- ENG EC 541 Computer Communication Networks
- ENG SE/EC/ME 544 Networking the Physical World
- ENG EC 715 Wireless Communications
- ENG SE/EC/ME 725 Queuing Systems
- ENG SE/EC/ME 741 Randomized Network Algorithms
- ENG EC 744 Mobile Ad Hoc Networking and Computing
- ENG SE/ME 755 Communication Networks Control

### E. Operations Research
- ENG ME/EC 514 Simulation
- ENG SE/EC/ME 710 Dynamic Programming and Stochastic Control
- ENG SE/EC/ME 714 Advanced Stochastic Modeling and Simulation
- ENG SE/EC/ME 724 Advanced Optimization Theory and Methods
- ENG SE/EC/ME 725 Queuing Systems
- ENG SE/EC/ME 732 Combinatorial Optimization and Graph Algorithms
- ENG SE/EC/ME 733 Discrete Event and Hybrid Systems
- ENG SE/ME 766 Advanced Scheduling Models and Methods

### F. Production and Service Systems
- ENG ME 510 Production Systems Analysis
- ENG SE/EC/ME 543 Sustainable Power Systems
- ENG SE/EC/ME 733 Discrete Event and Hybrid Systems
- ENG SE/ME 765 Production System Design
- ENG SE/ME 766 Advanced Scheduling Models and Methods
- GSM OM 726 Creating Value Through Operations and Technology
- GSM OM 854 Supply Chain Management

### Concentration/Course/Semester/Grade


### Elective
Select 3 courses from the Concentrations listed above, if not used to satisfy the Concentration Requirement; from the other Suggested Electives listed on the reverse, or no more than one Engineering Management Course from the approved list (12 credits).

<table>
<thead>
<tr>
<th>Course/Sem/Grade</th>
<th>Course/Sem/Grade</th>
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### Practicum
Indicate up to two courses (8cr), from the approved list on the next page, used to satisfy Core, Concentration, or Elective requirements.

<table>
<thead>
<tr>
<th>Course/Sem/Grade</th>
<th>Course/Sem/Grade</th>
<th>Fall 2015</th>
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</table>
**Elective Courses**

**Other Suggested Electives:**
- CAS EC 513 Game Theory
- ENG MS 700 Advanced Special Topics
- GRS EC 716 Game Theory
- CAS CS 511 Object-Oriented Software Principles
- GSM OM 855 Project Management
- ENG SE 900 Research
- ENG SE 951 Independent Study

**Engineering Management Courses** (no more than one permitted)
- ENG ME 502 Invention: Technology Creation, Protection, & Commercialization
- ENG ME 517 Product Development
- ENG ME 525 Technology Ventures
- ENG ME 550 Product Supply Chain Design
- ENG ME 583 Product Management
- ENG ME 584 Manufacturing Strategy
- GSM OB 848 E1 The Leadership Challenge
- GSM SI 839 Design & Innovation Strategy
- GSM SI 852 Starting New Ventures
- GSM SI 871 Tech to Market
- GSM PL 870 Gov't, Society, & the New Entrepreneur
- ENG EK 731/GSM HM 801 Bench to Bedside

**Approved Practicum Courses:**

1. **SE 925 Graduate Project**, OR
2. Two of the following, OR
   - ENG ME/MS 507 Process Modeling and Control
   - ENG ME/EC 514 Simulation
   - ENG SE/EC/ME 543 Sustainable Power Systems
   - ENG SE/EC/ME 544 Networking the Physical World
   - ENG ME 570 Robot Motion Planning
   - ENG SE/EC/ME 701 Optimal and Robust Control
   - ENG EC 702 Recursive Estimation and Optimal Filtering
   - ENG SE/ME 704 Adaptive Control
   - ENG SE/EC/ME 710 Dynamic Programming and Stochastic Control
   - ENG EC 715 Wireless Communications
   - ENG SE/EC/ME 724 Advanced Optimization Theory and Methods
   - ENG SE/EC/ME 725 Queuing Systems
   - ENG SE/EC/ME 732 Combinatorial Optimization and Graph Algorithms
   - ENG SE/EC/ME 733 Discrete Event and Hybrid Systems
   - ENG SE/ME/EC 734 Hybrid Systems
   - ENG SE/ME 740 Vision Robotics and Planning
   - ENG SE/EC 741 Randomized Network Algorithms
   - ENG EC 744 Mobile Networking and Computing
   - ENG SE/ME 755 Communication Networks Control
   - ENG SE/ME 762 Nonlinear Systems and Control
   - ENG SE/ME 765 Production System Design
   - ENG SE/ME 766 Advanced Scheduling Models and Methods
3. A Practicum Course from other College of Engineering departments:
   - ENG ME 526 - Simulation of Physical Processes
   - ENG ME 560 Precision Machine Design and Instrumentation
   - ENG BE 700 Advanced Topics in Biomedical Engineering
   - ENG EC 952 Directed Group Project

**Requirements and Deadlines at a Glance on Next Page.**
## REQUIREMENTS AND DEADLINES AT A GLANCE

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>DUE</th>
<th>DATE DUE</th>
<th>DATE COMPLETED</th>
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<tbody>
<tr>
<td>Credits</td>
<td>TOTAL, 32, as follows:</td>
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<tr>
<td></td>
<td>Core: 3 courses, 12 credits</td>
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<td>Concentration: 2 courses, 8 credits</td>
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<td>Elective*: 4-8 credits (Thesis); 12 credits (Non-Thesis)</td>
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<td>Thesis: 4-8 credits</td>
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<td></td>
<td>*No more than one Engineering Management Course may be selected from the approved list.</td>
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<tr>
<td>Practicum</td>
<td>Thesis: Satisfied by 4-8 credits of Thesis</td>
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<td>Non-Thesis: Satisfied by 4-8 credits from the approved list, used to satisfy Core, Concentration, or Elective requirements</td>
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<tr>
<td>Meet with Advisor</td>
<td>At least once each semester, to select classes, prepare Study Plan, and as needed.</td>
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<td>Submit Study Plan</td>
<td>By the end of first semester after matriculation (Last day of Classes as posted by Registrar). Must identify Practicum coursework.</td>
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<tr>
<td>Apply for Certified Full-Time Status</td>
<td>Before the start of every semester enrolled for &lt;12 credits; International students must be enrolled in a 900-level course to be eligible. If not enrolled in a 900-level course, International Students must be certified part time in their last semester by ISSO</td>
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<tr>
<td>Diploma Application</td>
<td>July 1 for September Graduation</td>
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<td>November 1 for January Graduation</td>
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<td>February 1 for May Graduation</td>
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<td>Graduation</td>
<td>January 25</td>
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<td>May (Commencement)</td>
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<td>September 25</td>
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<td>WITH ENGINEERING PRACTICE OPTION</td>
<td>By the end of the second semester after matriculation (Last day of Classes as posted by Registrar)</td>
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<tr>
<td>With Engineering Practice Form and required documents</td>
<td>Between student and internship supervisor; must be conducted and submitted.</td>
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<td>Mid-point Review</td>
<td>Before the end of the semester in which the internship takes place, for the Senior Associate Dean’s review.</td>
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<td>Internship Report</td>
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<tr>
<td>WITH CONCENTRATION OPTION</td>
<td>Data Analytics; Cybersecurity; Robotics</td>
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<td>Select a Specialization</td>
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<tr>
<td>Declaration of Specialization Form</td>
<td>Submit to the ENG Graduate Programs Office by Diploma Application deadline.</td>
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<tr>
<td>Specialization Practicum Approval Form</td>
<td>Submit to the ENG Graduate Programs Office by Diploma Application deadline.</td>
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<td>Specialization Practicum Instructions</td>
<td>Posted on ENG website.</td>
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