Boston University College of Engineering
Division of Systems Engineering MS Program Planning Sheet

Student Name: ____________________________  Advisor Signature: ____________________________  BU ID: ____________________________

Master of Science (MS) students must take 32 credits all of which must be at the 500 level or higher. The coursework requirements for the MS degree are as follows: **Core** (3 courses), **Concentration** (2 courses from one of the Concentration areas), **Electives** (1-2 courses), and **Thesis or Graduate Project** (4-8 credits). Among the aforementioned 32 credits, the **Practicum Requirement** is satisfied by up to two course from the approved list. Courses used to satisfy the core requirement may not also be used to satisfy the Concentration requirement. MS students must also satisfy the advanced technical course requirement by taking at least two 700-level or higher courses from the Systems Engineering concentration areas, or courses approved by the Systems Engineering Graduate Committee in advance. The remaining required MS credit hours remain unstructured and can be chosen, with advisor approval, to meet an individual student’s academic needs. 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.

**CORE** Select one course from each Core area.

A. **SE/EC/ME 501 Dynamic Systems Theory, or SE/EC/ME 710 Dynamic Programming and Stochastic Control** Semester/Grade ____________________________

B. **SE/EC 524 Optimization Theory and Methods** Semester/Grade ____________________________

C. **SE/ME 714 Advanced Stochastic Modeling and Simulation, or EC 505 Stochastic Processes, or EK 500 Probability with Statistical Applications** Semester/Grade ____________________________

**CONCENTRATION** Select two courses from one Concentration area.

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/ME 704 Adaptive Control
- ENG EC 708 Advanced Process Control
- ENG SE/ME/EC 710 Dynamic Programming and Stochastic Control
- ENG SE/ME/EC 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
- 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
- GRS GE 712 Regional Energy Modeling
- GRS EC 716 Game Theory
- 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 Queueing Systems
- ENG SE/EC 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 524 Optimization Theory and Methods
- 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 Queueing 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

**Electives** Select 4-8 credits from the Concentrations listed above, if not used to fulfill the Concentration requirement; or from the other Suggested Electives listed on the reverse. Indicate course number, grade, semester.

1. Course/Semester/Grade ____________________________  2. Course/Semester/Grade ____________________________

Suggested Electives: CAS EC 513 Game Theory, GRS EC 716 Game Theory, CAS CS 511 Object-Oriented Software Principles, GSM OM 855 Project Mgt

**Thesis or Graduate Project:**

Semester/Grade/Credits ____________________________  4-8 cr of SE901 Thesis, SE925 Graduate Project or SE 900 Research (PhD only). Semester/Grade/Credits ____________________________

**Practicum** Indicate up to two courses from the approved list on the reverse.

Course/Sem/Grade ____________________________  Course/Sem/Grade ____________________________  Fall ’13 v4
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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

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 EC 708 Advanced Process 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 Queueing 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