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

Student Name: ____________________________  Advisor Signature: ____________________________  BU ID ____________________________

MS (Thesis) students must take 32 credits all of which must be at the 500 level or higher. The coursework requirements for the MS (Thesis) are as follows:

**Core** (3 courses), **Concentration** (2 courses), **Elective** (4-8 credits), and **Thesis** (4-8 credits). The Practicum Requirement is satisfied by 4 credits of SE 954 Thesis or SE 900 Research (PhD Only). Courses used to satisfy the Core requirement may not also be used to satisfy the Concentration or Elective requirements. Elective courses may be 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 Concentration areas, 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. 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, either semester (subject to change). Courses may be offered every other year.

**CORE** (Select one course from each Core area. 12 credits.)
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 Adv Stoch Modeling and Sim, or EC 505 Stoch 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 SE/ME/EC 710 Dynamic Programming and Stochastic Control
   ENG SE/EC/ME 733 Discrete Event and Hybrid Systems
   ENG SE/ME/EC/ME 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 ME 533 Energy Conversion
   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
   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 Queueing 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 533 Energy Conversion
   ENG ME/EC 514 Simulation
   ENG SE/EC/ME 710 Dynamic Programming and Stochastic Control
   ENG SE/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 ME 518 Product Quality
   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**

Concentration/Course/Semester/Grade ____________________________

**ELECTIVE** (4-8 credits. Courses from the Concentrations listed above or suggested below. No more than one Engineering Management Course may be selected from the approved list.)

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

Suggested Electives: ENG EC 504 Advanced Data Structures, CAS EC 511 Object-Oriented Software Principles, CAS EC 513 Game Theory, CAS CS 542 Machine Learning, ENG EC 601 Product Design in ECE, ENG SE 700 Advanced Special Topics, GRS EC 716 Game Theory, GSM OM 855 Project Mgt, ENG SE 900 Research (PhD Only), SE 925 Graduate Project, or SE 951 Independent Study.

**THESIS:** (4-8 credits of SE 900 Research (PhD Only) or SE 954 Thesis.)

Course/Semester/Grade/Credits ____________________________  Course/Semester/Grade/Credits ____________________________

Fall 2017