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

Student Name: ____________________________  BU ID ____________________________
Advisor Signature: ____________________________

Master of Engineering (MEng) students must complete 32 credits all of which must be at the 500 level or higher and 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 MEng degree. The coursework requirements for the MEng degree are: Core (2 courses), Concentration (2 courses from one concentration area), and Electives (4 courses, including 2 Advanced Technical Electives).

The Advanced Technical Elective Requirement is satisfied by taking at least two 500-level or higher courses from the SE-designated courses in the Concentration or Elective course lists, or other courses approved by the Systems Engineering Graduate Committee in advance. The Elective courses can be chosen to meet an individual student’s academic needs. The Electives may include no more than two Engineering Management courses listed on the reverse. The choice of courses must form a coherent and balanced program in Systems Engineering. Among the 32 credits, the Practicum Requirement can be satisfied by up to two courses from the approved list. MEng students should make their course selection in consultation with their faculty advisor.

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 or in longer intervals.

Course Requirements

Core Select one course from each of two Core areas – 8 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/Simulation, or EC 505 Stochastic Processes, or EK 500 Probability with Stat App Semester/Grade ____________________________

Concentration Select two courses from one Concentration area listed on reverse – 8 credits

Circle the Concentration Area:
A. Computational and Systems Biology  
B. Control Systems  
C. Energy and Environmental Systems  
D. Network Systems  
E. Operations Research  
F. Production and Service Systems

ELECTIVES Select 4 courses (16 credits). Must include at least two 500-level SE-designated courses from the Concentrations listed on the reverse, if not used to satisfy the Concentration requirement; other Suggested Electives listed on the reverse; may include up to 8 credits from the approved Engineering Management courses listed on the reverse. Indicate course number, semester, and grade.

Course/Sem/Grade ____________________________  
Course/Sem/Grade ____________________________
Course/Sem/Grade ____________________________  
Course/Sem/Grade ____________________________

PRACTICUM Indicate up to two courses (8 cr), from the approved list on the reverse, used to satisfy Core, Concentration or Elective Requirements.

Course/Sem/Grade ____________________________  
Course/Sem/Grade ____________________________

APPROVED COURSES ON PAGE 2
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Concentration Areas

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 Systems Biology
   ENG BE 777 Computational Genomics I

B. Control Systems
   ENG SE/EC/ME 501 Dynamic Systems Theory
   *ENG ME/ME 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 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 EE 712 Regional Energy Modeling
   GRS EC 716 Game Theory
   QST OM 845 Clean Technology Business Models

Approved Practicum Courses:
1. Two of the following (indicated in the Concentration course list, above, with an asterisk*):
   - 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 SE/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

2. OR, ONE Practicum Course from other College of Engineering departments (indicated in the Concentration course list, above, with two asterisks**):
   - ENG ME 526 – Simulation of Physical Processes
   - ENG ME 560 Precision Machine Design and Instrumentation
   - ENG EC 601 Product Design in ECE
   - ENG BE 700 Advanced Topics in Biomedical Engineering
   - ENG EC 952 Directed Group Project

ELECTIVE COURSES

Other Suggested Electives:
CAS EC 511 Object-Oriented Software (not on course inventory)
CAS CS 542 Machine Learning
ENG EC 504 Advanced Data Structures
CAS EC 611 Object-oriented Software Principles and Design
ENG SE 700 Advanced Special Topics
QST OM 855 Project Management
ENG SE 951 Independent Study
ENG SE 952 Mentored Project

D. Network Systems
   ENG EC 541 Computer Communication Networks
   *ENG SE/EC/ME 544 Networking the Physical World
   ENG SE/EC 545 Cyber-Physical Systems
   ENG EC 715 Wireless Communications
   ENG SE/EC/ME 725 Queuing Systems
   *ENG SE/EC 741 Randomized Network Algorithms
   *ENG EC 744 Mobile Ad Hoc Networking and Computing
   *ENG SE 755 Communication Networks Control

E. Operations Research
   ENG EC 503 Intro to Learning from Data
   *ENG ME/EC 514 Simulation
   ENG EC/SE 523 Deep Learning
   ENG SE/EC 524 Optimization Theory and Methods
   CAS CS 542 Machine Learning
   ENG SE/EC 674 Optimization Theory and Methods II (PhD students only)
   *ENG SE/ME 710 Dynamic Programming and Stochastic Control
   *ENG SE/ME 714 Advanced Stochastic Modeling and Simulation
   *ENG SE/ME/EC 724 Advanced Optimization Theory and Methods
   *ENG SE/EC/ME 725 Queuing Systems
   *ENG SE/EC 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
   QST OM 726 Creating Value Through Operations and Technology
   QST OM 854 Operations Analysis and Innovation

Engineering Management Courses
   ENG EK 731 Bench-to-Bedside: Translating BME Innov from Lab to Marketplace
   ENG ME 502 Invention: Technology Creation, Protection, & Commercialization
   ENG ME 517 Product Development
   ENG ME 525 Technology Ventures
   ENG ME 583 Product Management
   ENG ME 584 Manufacturing Strategy
   QST MO 848 The Leadership Challenge
   QST SI 839 Design Thinking and Innovation
   QST SI 852 Starting New Ventures
   QST SI 855 Entrepreneurship
   QST SI 871 Strategies for Bringing Technology to Market
   QST HM 801 Bench-to-Bedside: Translating BME Innov from Lab to Marketplace

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