

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 take 32 credits all of which must be at the 500 level or higher. The coursework requirements for the MEng degree are as follows: 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. MEng 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 MEng 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.

Course Requirements

Core Highlight 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 Sem/Grade _____

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

Highlight the Concentration Area:

- A. Computational and Systems Biology Course/Semester/Grade _____
- B. Control Systems
- C. Energy and Environmental Systems Course/Semester/Grade _____
- 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/Semester/Grade _____	Course/Semester/Grade _____
Course/Semester/Grade _____	Course/Semester/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 _____

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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/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 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

Approved Practicum Courses:

- EK 691 Lean and Agile New Product Development
- 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 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

ELECTIVE COURSES

Other Suggested Electives:

CAS CS 511 Object-Oriented Software Principles
CAS CS 542 Machine Learning
ENG EC 504 Advanced Data Structures
ENG EC 528 Cloud Computing
ENG SE 700 Advanced Special Topics
GSM OM 855 Project Management
ENG SE 951 Independent Study

Engineering Management Courses

ENG EK 731 Biomedical Innovation

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 SE/EC/ME725 Queuing 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 EC 503 Learning from Data
ENG ME/EC 514 Simulation
ENG SE/EC 524 Optimization Theory and Methods
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
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

- 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
- A Practicum Course from other College of Engineering departments:
 - ENG EC 601 Product Design in ECE
 - ENG ME 526 - Simulation of Physical Processes
 - ENG ME 560 Precision Machine Design and Instrumentation
 - ENG EK691 Lean and Agile New Product Development
 - ENG BE 700 Advanced Topics in Biomedical Engineering
 - ENG EC952 Directed Group Project

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
GSM HM 801 Bench to Bedside