

Boston University College of Engineering
 Division of Materials Science & Engineering
 MS (Thesis) Program Planning Sheet



Student Name: _____ BU ID _____

Advisor Signature: _____

MS (Thesis) and Post-Bachelor PhD students must take 32 credits, all of which must be at the 500 level or higher. This must include **4 Core Courses**, **2 Concentration Courses**, and 4 to 8 credits of **ENG MS 954 Thesis** (post-bachelor PhD students may substitute 4 to 8 credits of ENG MS 900) - both ENG MS 954 and ENG MS 900 satisfy the masters Practicum requirement; and up to 4 credits **Elective**. Only one 400-level course may be taken, with advisor approval, if needed as a prerequisite for another course in the program. 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. Highlight selected courses

CORE (Four courses, one each from A, B, C and D. Highlight the course used for A and D. 16 credits)

- A. ENG MS 577 Elec, Opt, Mag Prop of Mtls **OR (PhD Only)** CAS PY 543 Introduction to Solid State Physics **Semester/Grade** _____
- B. ENG MS 505/ME 505 Thermodynamics and Statistical Mechanics **Semester/Grade** _____
- C. ENG MS 503/ME 503 Kinetic Processes in Materials **Semester/Grade** _____
- D. ENG MS 574/EC 574 Physics of Semiconductor Materials **or** ENG MS 504 Polymers and Soft Materials **or** ENG MS 582/ME 582 Mechanical Behavior of Materials **or** ENG MS 508/ME 508 Computational Methods in Materials Science **Semester/Grade** _____

CONCENTRATION (Two courses from one area. 8 credits)

A. Biomaterials

- ENG BE 506 Phys Chem of Cell Structure and Machinery
- ENG BE 521 Continuum Mechanics for Biomedical Engineers
- ENG MS/BE/ME 523 Mechanics of Biomaterials
- ENG MS/ME/BE 524 Skeletal Tissue Mechanics
- ENG BE 533 Biorheology
- ENG MS/BE/ME 549 Structure & Function Extracellular Matrix
- GRS CH 552 Materials Chemistry
- GRS CH 621 Biochemistry
- GRS CH 629 DNA Nanotechnology
- ENG MS/ME/BE 726 Fundamentals of Biomaterials
- ENG MS/ME/BE 727 Principles & Applications of Tissue Eng
- ENG MS/BE 736 Biomedical Transport Phenomena
- ENG MS/ME 742 Bio-fluids and Structural Mechanics
- GRS PY 744 Polymer Physics
- GRS PY 771 Systems Biology for Physical Scientists & Eng

B. Electronic/Photonic Materials

- ENG EC 560 Introduction to Photonics
- ENG EC 575 Physics of Semiconductor Devices
- ENG EC 578 Fabrication Tech for Integrated Circuits
- GRS PY 741 Solid State Physics I
- GRS PY 742 Solid State Physics II
- GRS PY 745 Experimental Surface Physics and Chemistry
- ENG MS/EC 764 Optical Measurement
- ENG EC 770 Guided-wave Optoelectronics
- ENG MS/EC 774 Semiconductor Quant. Strctrs & Phot Dev
- ENG EC 776 Fundamentals of Nanoelectronics

C. Materials for Energy and Environment

- ENG MS/ME 527 Trans. Phenomena in Matls Processing
- ENG MS/ME 532 Atomic Structure & Dislocations in Matls
- ENG MS/ME 535 Green Manufacturing
- ENG MS/ME 545 Electrochemistry of Fuel Cells & Batteries
- GRS CH 552 Materials Chemistry
- GRS CH 631 Structure and Bonding
- ENG MS/EC 573 Solar Energy Systems
- GRS PY 741 Solid State Physics I
- GRS PY 742 Solid State Physics II
- GRS PY 745 Experimental Surface Physics and Chemistry
- ENG MS/ME 781 Electroceramics

D. Nanomaterials

- ENG MS/ME 530 Intro to Micro and Nanomechanics of Solids
- GRS CH 552 Materials Chemistry
- ENG MS/ME 555 MEMS Fabrication and Materials
- GRS CH 631 Structure and Bonding
- ENG MS/ME 718 Advanced Topics in Nanotechnology
- ENG MS/ME 735 Computational Nanomechanics
- GRS PY 745 Experimental Surface Physics and Chemistry
- ENG EC 777 Nanostructure Optics
- ENG MS/ME 778 Micromachined Transducers

A. B. C. D. (select area completed)

Course/Semester/Grade _____

Course/Semester/Grade _____

THESIS (MS 954 Thesis, 4 to 8 credits. Post-Bachelors PhD students may use 4 to 8 credits of MS 900 Research.)

Course/Semester/Grade/Credit _____ **Course/Semester/Grade/Credit** _____

ELECTIVE Optional; if only 4 credits of MS 954 or MS 900 are used to satisfy the Thesis requirement. Highlight one course from the list

below, or write in from above if not used to satisfy core, concentration or thesis requirement. 4 credits. **Sem/Grade** _____

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|---|--|
| ENG MS 500 Special Topics | ENG MS 700 Adv Special Topics |
| ENG MS/ME 507 Process Modeling and Control | GRS PY 745 Experimental Physics and Chemistry |
| ENG ME 516 Statistical Mechanical Concepts in Engineering | CAS CH 751 Advanced Topics in Physical Chemistry |
| ENG MS/ME 526 Simulation of Physical Processes | ENG MS 782 Advanced Materials Characterization |
| ENG MS/ME 534 Matls Technology for Microelectronics | ENG MS 784 Topics in Materials Science |
| ENG MS 539 Intro to Materials Science and Engineering | ENG MS 900 PhD Research |
| ENG MS/ME/EC 579 Microelectronic Device Mfg | ENG MS 925 Graduate Project |
| ENG MS/ME 580 Theory of Elasticity | ENG MS 951 Independent Study |
| ENG EK 691 Lean and Agile New Product Development | |