

Name (Last Name, First Name) \_\_\_\_\_

Student ID #: \_\_\_\_\_

Quarter/Year Expected to Graduate: \_\_\_\_\_

Area of Emphasis: \_\_\_\_\_

Thesis/Comp Exam: \_\_\_\_\_

Thesis Advisor (if applicable): \_\_\_\_\_

**COURSEWORK (MINIMUM OF 12 COURSES REQUIRED)**

<u>CORE COURSES</u>	<u>COURSE</u>	<u>UNITS</u>	<u>GRADE</u>	<u>QTR</u>	<u>YR</u>	<u>Thesis</u>	<u>Comprehensive Exam</u>
Crystalline Solids	MSE 200	4				Minimum of <b>4 courses</b> must be made up of core courses.  Core Courses must be completed with a B (3.0) or higher.	Minimum of <b>4 courses</b> must be made up of core courses.  Core Courses must be completed with a B (3.0) or higher.
Fundamentals of Microfabrication or Advanced Manufacturing	MAE 252 or ENGR 265	4					
Mechanical Behavior of Solids – Atomistic Theories	MAE 259	4					
Biomedical Microdevices <i>(Not offered so students will take an extra emphasis course - General Petition needed)</i>	TBD	4					
<b>Total Core Course Units</b>							
<u>EMPHASIS COURSES</u>	<u>COURSE</u>	<u>UNITS</u>	<u>GRADE</u>	<u>QTR</u>	<u>YR</u>		
<i>Choose an Area of Emphasis (2<sup>nd</sup> page)</i>						Students must choose one area of emphasis.  Minimum of <b>3 courses</b> must be from the chosen area of emphasis.	Students must choose one area of emphasis.  Minimum of <b>4 courses</b> must be from the chosen area of emphasis.
<b>Total Emphasis Course Units</b>							
<u>ELECTIVE COURSES</u>	<u>COURSE</u>	<u>UNITS</u>	<u>GRADE</u>	<u>QTR</u>	<u>YR</u>		
Students can choose to take elective graduate-level courses numbered 200-289.  No more than <b>2</b> upper-division (100+) undergraduate courses taken as a graduate student may be counted.						Students must fulfill a minimum of <b>5 courses</b> .  Up to <b>3 courses</b> (12 units) of BME 296, CBEMS 296, CEE 296, EECS 296 or MAE 296 can count.	Students must fulfill a minimum of <b>4 courses</b> .  Up to <b>1 course</b> (4 units) of research units (e.g.: 299 Individual Research) can count.
<b>Total Elective Units</b>							
<b>TOTAL UNITS</b>							

Signature of Student: \_\_\_\_\_

Date: \_\_\_\_\_

Program Director: \_\_\_\_\_

Date: \_\_\_\_\_

Associate Dean of Engineering: \_\_\_\_\_

Date: \_\_\_\_\_

There are four primary areas of emphasis within Materials and Manufacturing Technology (MMT): Chemical Processing and Production, Electronic and Photonic Materials and Devices, Biomedical and Electronic Manufacturing and Materials Engineering. Electives within each of the emphasis areas are listed below.

***Elective Courses by Areas of Emphasis***

<b>Chemical Processing and Production</b>	<b>Electronic and Photonic Materials and Devices</b>
CHEM 213 (Chemical Kinetics) CBE 200 (Applied Engineering Mathematics I) CBE 210 (Reaction Engineering) CBE 220 (Transport Phenomena) CBE 240 (Advanced Engineering Thermodynamics) CBE 278 (Chemistry and Technology for the Nuclear Fuel Cycle) ENGRCEE 262 (Environmental Chemistry II) ENGRCEE 265 (Physical-Chemical Treatment Processes) ENGRCEE 266 (Drinking Water and Wastewater Biotechnology) ENGRCEE 276 (Hydrology)	BME 210 (Molecular and Cellular Engineering) BME 225 (Tissue and Organ Biophotonics) BME 251 (Engineering Medical Optics) CHEM 242A (Physical and Geometrical Optics) EECS 174 (Semiconductor Devices) EECS 176 (Fundamentals of Solid-State Electronics and Materials) EECS 188 (Optical Electronics) EECS 277A (Advanced Semiconductor Devices I) EECS 277B (Advanced Semiconductor Devices II) EECS 277C (Nanotechnology) EECS 285A (Optical Communications) EECS 285B (Lasers and Photonics) EECS 280A (Advanced Engineering Electromagnetics I) EECS 280B (Advanced Engineering Electromagnetics II) ENGRMAE 220 (Conduction Heat Transfer) ENGRMAE 221 (Convective Heat and Mass Transfer)
<b>Biomedical and Electronic Manufacturing</b>	<b>Materials Engineering</b>
BME 222 (Biofluid Mechanics) BME 251 (Engineering Medical Optics) BME 260 (Microfluids and Lab-On-A-Chip) BME 262 (Microimplants) CBE 288 (Optoelectronics Packaging) EECS 279/ENGRMAE 249 (Micro-Sensors and Actuators) ENGRMAE 212 (Engineering Electrochemistry: Fundamentals & Apps) ENGRMAE 242 (Robotics) ENGRMAE 247/EECS 278 (Micro-System Design) ENGRMAE 250 (Biorobotics) ENGRMAE 253 (Advanced BIOMEMS Manufacturing Techniques)	CHEM 225 (Polymer Chemistry) ENGRCEE 242 (Advanced Strength of Materials) ENGRCEE 243 (Mechanics of Composite Materials) ENGRCEE 254 (Advanced Reinforced Concrete Behavior and Design) ENGRCEE 255 (Advanced Behavior and Design of Steel Structures) ENGRMAE 212 (Engineering Electrochemistry: Fundamentals & Apps) ENGRMAE 224 (Advanced Transport Phenomena) ENGRMAE 230A (Inviscid Incompressible Fluid Mechanics I) ENGRMAE 230B (Viscous Incompressible Fluid Mechanics II) ENGRMAE 230C (Compressible Fluid Dynamics) ENGRMAE 254 (Mechanics of Solids and Structures) ENGRMAE 255 (Composite Materials and Structures) ENGRMAE 258 (Mechanical Behavior of Solids – Continuum Theories) ENGRMSE 205 (Materials Physics) ENGRMSE 241 (Nano-Scale Materials and Applications) ENGRMSE 254 (Polymer Science and Engineering) ENGRMSE 255A (Design with Ceramic Materials) ENGRMSE 256A (Mechanical Behavior of Engineering Materials) ENGRMSE 259 (Transmission Electron Microscopy) ENGRMSE 261 (High Temperature Deformation of Engineering Materials) ENGRMSE 264 (Scanning Electron Microscopy) ENGRMSE 265 (Phase Transformations) ENGRMSE 273 (Electroceramics & Solid State Electrochemical Systems) PHYSICS 238A-238B-238C (Condensed Matter Physics)