Chemical Engineering Optional Concentrations

9 credits for Concentration
3 credits must be from CHE courses
3 credits must be from ENGR courses

Biological Engineering (9 credits)

- (3) ABE 58000* Process Engineering of Renewable Resources (CHE 34800)
- (3) BHM 56100 General Biochemistry I (CHM 26200)
- (3) BME 52100 Biosensors: Fundamentals and Applications (BIO23000 & MA 26600/30300/30400/36600)
- (3) BME 49500 Biomolecular Engineering
- (3) BME 49500 Introductory Computational Biology
- (3) CHE 34800 Introduction to Chemical Engineering
- (3) CHE 52500* Biochemical Engineering (CHE 34800)
- (3) CHE 59700 Engineering Applications of Biological Molecules
- (3) CHE 59700 Principles of Tissue Engineering
- (3) CHE 59700 System Analysis of Energy Production
- (3) ME 59700 Bio-energy and Biofuels

*Students cannot earn credit in both CHE 52500 and ABE 58000

Energy and Environment (9 credits)

- (3) CE 35000 or EEE 35000 Environmental Engineering (MA 16200, PHYS 17200, CHM 11600)
- (3) CE 35500 or EEE 35500 Engineering Environmental Sustainability
- (3) CE 45700 Air Pollution Control and Design (CE 34000)
- (3) CE 55400 Aquatic Chemistry in Environmental Engineering (CE 34000)
- (3) CHE 41100 or 49800 Energy and Environment Related Research
- (3) CHE 55800 Rate Controlled Separation Processes (CHE 30600 & CHE 37800)
- (3) CHE 59700 Advanced Solar Energy Conversion
- (3) CHE 59700 System Analysis of Energy Production
- (3) CHE 59700 Battery Storage Systems Lab
- (3) CHE 59700 Energy Storage Systems
- (3) CHE 59700 Organic Electronic Materials & Devices
- (3) ME 41800 Engineering of Environmental Systems and Equipment (ME 30000/30100 & ME 31500)
- (3) ME 59700 Bio-Energy and Biofuels
- (3) NUCL 40200 Engineering of Nuclear Power Systems (ME 35100 or NUCL 35100)
- (3) NUCL 47000 Fuel Cell Engineering
- (3) NUCL 53000 Radioactive Waste Management (CHM 10200 & NUCL 20000/21100)
- (3) NUCL 56300 Direct Energy Conversion

Material and Polymers (9 credits)

- (3) CHE 41100 or 49800 Material and Polymer Related Research
- (3) CHE 44200 Chemistry and Engineering of High Polymers (CHM 26200 & CHM 37000)
- (3) CHE 51700 Micro/Nanoscale Physical Processes (CHE 37700 & CHE 37800)
- (3) CHE 53600 Particulate Systems (CHE 37700)
- (3) CHE 54300 Polymerization Reaction Engineering and Reactor Analysis (CHE 34800)
- (3) CHE 54400 Structure and Physical Behavior (CHM 26200 & CHM 37000)
- (3) CHE 55600 Fundamental of Microelectronics Processing (ECE 30500)
- (3) CHE 59700 Organic Electronic Materials & Devices
- (3) MSE 37000 Electrical, Optical and Magnetic Properties if Materials (PHYS 2410)
- (3) MSE 51000 Microstructural Characterization Techniques (Senior Classification)
- (3) MSE 51200 Powder Processing (Senior Classification)
- (3) MSE 52500 Struct-Property Relations of Engineering Polymers (Junior 75+credits & Senior Classification)
- (3) MSE 55600 Fracture of Materials (Senior Classification)
- (3) MSE 56000 Production of Inorganic Materials (Junior 75+credits & Senior Classification)
- (3) MSE 59700 Manufacturing Advanced Composites
- (3) MSE 59700 Biomaterials
- (3) MSE 59700 Characterization of Advanced Composite Materials

Pharmaceutical Engineering (9 credits)

- (3) CHE 41100 or 49800 Pharmaceutical Engineering Related Research
- (3) CHE 53600 Particulate Systems (CHE 37700)
- (3) CHE 55500 Computer Integrated Process Operations (Senior Classification)
- (3) CHE 55700 Intelligent Systems in Process Engineering (Senior Classification)
- (3) CHE 59700 Pharmaceutical Process Development and Design
- (3) CHE 59700 Principles of Pharmaceutical Engineering (CHE 34800 & 37800 concurrently)
- (3) IPH 36200 Basic Pharmacetics I
- (3) IPH 56200 Introduction to Pharmaceutical Manufacturing Process (CHM 37000)
- (3) PHAD 50100 Food and Drug Law Administration

Prerequisites are listed in italics.