ChE 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) BCHM 30700 Biochemistry (CHM 26200)
(3) BCHM 56100 General Biochemistry I (CHM 26200)
(3) BME 52100 Biosensors: Fundamentals and Applications (BIO23000 & MA 266000/30300/30400/36600)
(3) BME 49500 Biomolecular Engineering
(3) BME 49500 Introductory Computational Biology
(3) BME 55100 Tissue Engineering
(3) CHE 41100 or 49800 Biological Engineering Related Research
(3) CHE 52500* Biochemical Engineering (CHE 34800)
(3) CHE 59700 Engineering Applications of Biological Molecules
(3) CHE 59700 Principles of Tissue Engineering
(3) CHM 53300 Introductory Biochemistry (CHM 26200 & CHM 32100)
(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) 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 50300 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 59700 Organic Electronic Materials & Devices
(3) MSE 37000 Electrical, Optical and Magnetic Properties of Materials (PHYS 24100)
(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) HSSP 50100 Food and Drug Law Administration I
(3) IPPH 56200 Introduction to Pharmaceutical Manufacturing Process (CHM 37000)

Prerequisites are listed in italics.