

Chemical Engineering Emphasis: Course Suggestions

This list of classes is a suggestion for you as you build your Emphasis. You will have to make sure you have the pre-requisites and in some cases you also might need to get permission from the faculty teaching the class.

2022-2026 Catalog

CHEM 126,127,128: General Chemistry for Physical Sciences and Engineering I, II, III. Topics include atomic theory, chemical reactions, bonding, stoichiometry, nomenclature, gas laws, thermochemistry, molecular structure, intermolecular forces, solution chemistry, thermodynamics, kinetics, equilibrium (including acids and bases), electrochemistry, nuclear chemistry, and acid-base chemistry.

CHEM 216,217,218: Organic Chemistry I, II, III. Structure, bonding, nomenclature, isomerism, stereochemistry and physical properties of organic compounds. Properties and reactions of alkanes, alkynes, alkyl halides, carbonyl compounds, alcohols, ethers, amines and carbohydrates.

CHEM 223: Organic Chemistry Laboratory for Life Sciences III. Practice in multi-step organic synthesis, enzymatic organic chemistry, biomimetic organic chemistry.

CHEM 351,352,353,356,357: Physical Chemistry I, II, III and Laboratories I, II. Kinetic-molecular theory, gas laws, principles of thermodynamics. Electrochemistry, kinetics, viscosity, surface and transport properties. Quantum chemistry, spectroscopy and diffraction. Experimental studies of gases, solutions, thermochemistry, chemical and phase equilibria, electrochemistry, chemical and enzyme kinetics, computational methods and applications to chemistry and biochemistry.

ME 236: Measurement and Engineering Data Analysis. Introduction to principles and practice of measurement. Application of probability distributions, sampling, confidence intervals, uncertainty, and regression analysis to engineering experiments and design. Techniques for measuring common physical quantities such as temperature, pressure, and strain. Introduction to laboratory report writing and communication of technical data.

ME 302,303: Thermodynamics I and II. Properties of working fluids and fundamental relations for processes involving the transfer of energy. Vapor and gas power cycles, refrigeration cycles, thermodynamic relations, psychometrics, and chemical reactions.

ME 341,347: Fluid Mechanics I and II. Fluid properties and fluid statics. Viscous flow, boundary layer concepts, lift and drag, compressible flow, turbomachinery.

ENVE 325: Air Quality Engineering. Causes and effects of air pollution on individual, regional, and global scales including meteorology, pollutant chemistry, global and regional transport, health impacts, regulations, air pollution control technology, and global climate change.