CHEMICAL ENGINEERING

Not all courses are offered every semester. Refer to the schedule of courses for each term's specific offerings. More Info (http://registrar.ufl.edu/soc/)

Courses at the University of Florida, with the exception of specific foreign language courses and courses in the online Master of Arts in Mass Communication program, are taught in English.

Department Information

The work of the Department of Chemical Engineering is not restricted to the chemical industry, chemical changes or chemistry. Instead, modern chemical engineers are concerned with all the physical, chemical, and biological changes of matter that can produce an economic product or result that is useful to mankind. Website (https://www.che.ufl.edu/)

CONTACT

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1030 Center Drive
CHEMICAL ENGINEERING STUDENT CENTER (CESC)
GAINESVILLE FL 32611-2030
Map (http://campusmap.ufl.edu/#/index/0958)

Curriculum

- Biomolecular Engineering Minor
- Chemical Engineering
- Combination Degrees

Courses

ABE 2062 Biology for Engineers 3 Credits
Grading Scheme: Letter Grade
Principles and engineering applications of biology. Principles and applications of biochemistry, genetics, microbial systems, animal systems, ecological systems and global systems. (B) (WR)
Attributes: General Education - Biological Science, Satisfies 6000 Words of Writing Requirement

BME 3406 Introduction to Biomolecular Engineering 3 Credits
Grading Scheme: Letter Grade
Introduces chemical engineering students interested in bio-related careers to the chemical engineering discipline. Emphasizes the link between biology and chemical engineering and the interface between them. 
Prerequisite: ABE 2062 or ECH 2062.

BME 4220 Biomolecular Cell Mechanics 3 Credits
Grading Scheme: Letter Grade
Covers the biomolecular basis of cell mechanics and cell motility, emphasizing quantitative models and systems-biology approaches.

BME 4321 Dynamics of Cellular Processes 3 Credits
Grading Scheme: Letter Grade
Confocal microscopy, techniques for imaging macromolecular dynamics and interactions inside living cells, models of intracellular diffusion, models of ligand-receptor binding, interplay between binding and transport, modeling and analysis of experiments. Examples from literature include mRNA transport, nuclear pore dynamics, cytoskeletal dynamics, imaging motor proteins and transcription factor dynamics.
Prerequisite: a course on kinetics and/or transport, or instructor permission.

ECH 3023 Material and Energy Balances 4 Credits
Grading Scheme: Letter Grade
Formulation and solution of material and energy balances utilizing physical/chemical properties of matter as applied to analyzing unit operations systems.
Prequisite: CHM 2046 or (MAC 2312 and PHY 2048).
Corequisite: PHY 2049, MAC 2313 and MAP 2302.

ECH 3101 Process Thermodynamics 3 Credits
Grading Scheme: Letter Grade
Introduces fundamental principles of classical thermodynamics. Applications to modeling and analysis of physical and chemical processes undergoing change. 
Prerequisite: (CHM 4411 or PHY 3513) and COT 3502 and ECH 3264.

ECH 3203 Fluid and Solid Operations 3 Credits
Grading Scheme: Letter Grade
Characteristics of laminar and turbulent flow, mechanical energy balance, flow through packed beds and fluidization of solids, design of pumping systems and piping networks and metering of fluids.
Prequisite: COT 3502 and ECH 3264.

ECH 3223 Energy Transfer Operations 3 Credits
Grading Scheme: Letter Grade
Steady state conduction in solids and heterogeneous materials, transient conduction, convection heat transfer, heat transfer during boiling and condensation, radiation heat transfer, design of heat-transfer equipment and heat exchange networks.
Prequisite: COT 3502 and ECH 3264.

ECH 3264 Elementary Transport Phenomena 3 Credits
Grading Scheme: Letter Grade
Flux law and conservation equations of mass, energy and momentum; steady and unsteady states as applied to physical and chemical processing; macroscopic and microscopic analysis.
Prequisite: ECH 3023 and MAP 2302 and MAC 2313.

ECH 4123 Phase and Chemical Equilibria 3 Credits
Grading Scheme: Letter Grade
Application of thermodynamic principles to systems of variable composition including the study of phase and chemical equilibria. 
Prerequisite: ECH 3101 and ECH 3203 and ECH 3223.
ECH 4948 Internship Work Experience 1 Credit
Grading Scheme: S/U
Practical internship work experience under approved industrial supervision, as set forth in college regulations.
Prerequisite: Engineering major.

ECH 4949 Co-op Work Experience 1 Credit
Grading Scheme: S/U
Practical co-op work experience under approved industrial supervision, as set forth in college regulations.
Prerequisite: Engineering major.

EGN 1935 Special Topics in Freshman Engineering 1-3 Credits
Grading Scheme: Letter Grade
Laboratory, lectures or conferences cover selected topics in engineering.

EGN 4912 Engineering Directed Independent Research 0-3 Credits
Grading Scheme: S/U
Provides firsthand, supervised research with a faculty advisor or postdoctoral or graduate student mentor. Projects may involve inquiry, design, investigation, scholarship, discovery or application. (S-U)

EGS 1005 Prep for Success 1-4 Credits
Grading Scheme: S/U
Freshman success course that includes academic preparation in calculus, chemistry, student success and technical communications. (S-U)
Prerequisite: EG student.