Chemical Engineering Graduate Courses

**CH E 601 Transport Phenomena 3(3,0)**
Mathematical analysis of single and multidimensional steady-state and transient problems in momentum, energy and mass transfer. Both the similarities and differences in these mechanisms are stressed. *Preq:* CH E 312, MTHSC 208.

**CH E 612 Polymer Engineering 3(3,0)**
Design-oriented course in synthetic polymers. Topics include reactor design used in polymer production, effect of step versus addition kinetics on reactor design, epoxy curing reactions, polymer solubility, influence of polymerization and processing conditions on polymer crystallinity. *Preq:* CH 224 and 332 or consent of instructor.

**CH E (B E) 628 Biochemical Engineering 3(3,0)** See B E 628.

**CH E 645 Selected Topics in Chemical Engineering 3(3,0)**
Topics not covered in other courses, emphasizing current literature, research and practice of chemical engineering. Topics vary from year to year. May be repeated, but only if different topics are covered. *Preq:* Consent of instructor.

**CH E 650 Chemical Reaction Engineering 3(3,0)**
Review of kinetics of chemical reactions and an introduction to the analysis and design of chemical reactors. Topics include homogeneous and heterogeneous reactions, batch and continuous flow reaction systems, catalysis, and design of industrial reactors. *Preq:* CH E 312, 321, CH 332.

**CH E 803 Advanced Transport Phenomena 3(3,0)**
Analysis of heat, mass and momentum transfer; derivation and application of the governing equations; solution of steady and unsteady-state multidimensional problems in fluid flow, heat transfer and mass transfer.

**CH E 804 Chemical Engineering Thermodynamics 3(3,0)**
Study of equilibria of physical and chemical systems and generalized properties of hydrocarbons. Includes application of thermodynamic methods in equipment design.

**CH E 805 Chemical Engineering Kinetics 3(3,0)**
Kinetics of chemical reactions, particularly in design and operation of chemical reactors.

**CH E (EE&S) 814 Applied Numerical Methods in Process Simulation 3(3,0)**
Numerical solution techniques as applied to chemical process systems; finite difference techniques for partial differential equations stressing applied numerical methods rather than theoretical numerical analysis. Standard methods for ordinary differential equations are reviewed. *Preq:* Consent of instructor.

**CH E 818 Polymer Processing 3(3,0)**
Processing of polymeric materials; polymer flow characterization; extrusion; mixing; filtration; injection molding; fiber and film formation; physical science principles such as fluid flow, heat transfer, crystallization and rheology applied to polymer processing operations.

**CH E 819 Viscoelastic Properties of Polymers and Polymeric Composites 3(3,0)**
Time- and frequency-dependent behavior of structural polymers and their composites; interrelationship between various viscoelastic properties; influence of aging; prediction of composite viscoelastic response by application of the Viscoelastic Correspondence Principle. *Preq: Consent of instructor.*

**CH E 823 Mass Transfer and Stagewise Contact Operations 3(3,0)**
Stagewise contact operations emphasizing distillation; vapor-liquid equilibria; integral and differential distillation; binary and multicomponent rectification; analytical methods; batch rectification; azeotropic and extractive distillation.

**CH E 834 Advanced Chemical Engineering Thermodynamics 3(3,0)**
Classical and statistical thermodynamics applied to problems in chemical engineering emphasizing modern methods of predicting thermophysical properties of gases and liquids. Students’ and instructor’s interests influence course content but usually include fundamentals of applied statistical mechanics, molecular theory of dense fluids, descriptions of intermolecular forces, gas-liquid and liquid-liquid critical phenomena, theories of interfacial phenomena and adsorption, statistical mechanics of polymeric systems, statistical mechanics of polydispersed systems, computer simulation of fluids by Monte Carlo, molecular dynamics and stochastic dynamics methods. *Preq: CH E 804 or equivalent.*

**CH E 845 Selected Topics in Chemical Engineering 3(3,0)**
Topics not covered in other courses emphasizing current literature and results of current research. Topics vary from year to year to keep pace with developments. May be repeated for credit.

**CH E 890 Special Projects 1-6**
Comprehensive analytical and/or experimental treatment of phenomena of current interest in chemical engineering emphasizing modern technological problems. May be repeated for maximum of six credits. To be taken Pass/Fail only. *Preq: Consent of instructor and department chair.*

**CH E 891 Master’s Thesis Research 1-12**

**CH E 895 Chemical Engineering Graduate Seminar 1(1,0)**
Series of weekly, one-hour seminars given by students, faculty and guests on topics of current interest. Credits earned in this course do not apply to or alter the required minimum of six research hours for the MS degree or the required 30 research credit hours for the PhD degree. To be taken Pass/Fail only.

**CH E 945 Selected Topics in Chemical Engineering 3(3,0)**
More comprehensive study of topics first covered in CH E 845.

CH E 991 Doctoral Dissertation Research 1-12