

341. **Construction Renovation**
  
  **Description:**
  Construction projects involving the renovation of existing buildings, focusing on sustainable practices and the integration of new technologies.

  **Course Details:**
  Fall, Spring.
  
  **Prerequisites:**
  CHE 237, R: Open only to Building Construction Management majors.

  **Credit:**
  3 credits.

351. **Concepts of Fire Safe Construction**
  
  **Description:**
  Understanding fire safety and fire protection in buildings, including fire-resistant materials, fire ratings, and fire protection systems.

  **Course Details:**
  Fall, 3 credits.
  
  **Prerequisites:**
  CHE 237, R: Open only to Building Construction Management majors.

  **Credit:**
  3 credits.

352. **Land Development**
  
  **Description:**
  Principles and practices of land development, including site development, planning, and environmental considerations.

  **Course Details:**
  Fall, 3 credits.
  
  **Prerequisites:**
  CHE 237, R: Open only to Building Construction Management majors.

  **Credit:**
  3 credits.

362. **Commercial Utility Systems**
  
  **Description:**
  Systems for providing utilities such as electricity, gas, and water to buildings, including distribution systems and energy management.

  **Course Details:**
  Spring, 3 credits.
  
  **Prerequisites:**
  CHE 237, R: Open only to Building Construction Management majors.

  **Credit:**
  3 credits.

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**CHEMICAL ENGINEERING**

**Department of Chemical Engineering College of Engineering**

**201. Material and Energy Balances**
  
  **Description:**
  Analysis of material and energy balances in chemical processes, focusing on mass and energy conservation.

  **Course Details:**
  Fall, Spring.
  
  **Prerequisites:**
  MTH 153, CHE 140 or 152.

  **Credit:**
  4 credits.

**311. Fluid Flow and Heat Transfer**
  
  **Description:**
  Analysis of fluid flow and heat transfer in chemical processes, including fluid dynamics and heat transfer mechanisms.

  **Course Details:**
  Spring.
  
  **Prerequisites:**
  CHE 237 or concurrently.

  **Credit:**
  4 credits.

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**Chemical Engineering Materials**

**371. Chemical Engineering Materials**
  
  **Description:**
  Study of materials used in chemical engineering processes, including properties and selection.

  **Course Details:**
  Fall, 3 credits.
  
  **Prerequisites:**
  CHE 237, R: Open only to Chemical Engineering majors.

  **Credit:**
  3 credits.

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**Thermodynamics for Chemical Engineering**

**321. Thermodynamics for Chemical Engineering**
  
  **Description:**
  Application of thermodynamics to chemical engineering processes, including phase change and energy transfer.

  **Course Details:**
  Spring.
  
  **Prerequisites:**
  CHE 151 or concurrently.

  **Credit:**
  3 credits.

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**Chemical Reaction Engineering**

**431. Chemical Reaction Engineering**
  
  **Description:**
  Study of chemical reactions and their application in chemical engineering processes, including reaction kinetics and reactor design.

  **Course Details:**
  Spring.
  
  **Prerequisites:**
  CHE 237, R: Open only to Chemical Engineering majors.

  **Credit:**
  3 credits.

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**Process Design and Control**

**492. Process Dynamics and Control**
  
  **Description:**
  Analysis of process dynamics and control systems, including feedback control and dynamic response.

  **Course Details:**
  Fall.
  
  **Prerequisites:**
  CHE 431, R: Open only to Chemical Engineering majors.

  **Credit:**
  3 credits.
871. Material Surfaces and Interfaces
Fall of odd numbered years. 3(3-0) Interdepartmental with Materials Science and Mechanics.
QP: CEM 382 or MSM 251. R: Open only to Chemical Engineering, Materials Science, Chemistry, or Packaging majors.
Physical and chemical nature of solid surfaces and their interaction with gases, liquids, and other solids. Characterization of surfaces and solid-solid interfaces. Qualitative and interfacial structure to engineering phenomena.
QP: CEM 361 or MMM 340

881. Selected Topics in Chemical Engineering
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to Chemical Engineering majors.
Study of newly-developing or non-traditional chemical engineering topics in a classroom environment.
QA: CHE 410

891. Seminar
Fall, Spring, Summer. 1(0-3) A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to Chemical Engineering majors. Supervised and directed individual research in a problem of interest.
QP: CHE 890

921. Viscoplasticity and Flow ofPolymeric Materials
Spring of even-numbered years. 3(3-0)
P: CHE 801 or CHE 822. Time dependent and steady flow properties of polymeric materials related to molecular and structural parameters. Examples of polymeric blends and composites with thermoplastic and thermoset components.
QP: CHE 801 or CHE 850 QA: CHE 860

922. Advanced Transport Phenomena
Spring, 3(3-0)
QP: CHE 481 QA: CHE 850, CHE 851