Building Construction Management—BCM

823 Advanced Construction Project Management
Fall, Spring. 3(3-0) RB: (BCM 411 and BCM 415) R: Open only to graduate students in Building Construction Management. Project management issues, services and documentation. Bidding, cost accounting, scheduling, Project planning and controlling.

890 Special Problems
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course. R: Open only to graduate students in College of Agriculture and Natural Resources. Approval of department; application required. Individual study in land acquisition and development, design, construction, management, finance, marketing, and structural analysis.

891 Advanced Topics in Building Construction Management
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to graduate students in College of Agriculture and Natural Resources. Approval of department.

Advanced topics in building construction management.

892 Construction Management Research Seminar
Fall, 3(2-0) R: Open only to graduate students in the College of Agriculture and Natural Resources or College of Engineering, or College of Human Ecology. Current areas and topics of research in construction management. Resources of research results, analysis of existing research and development of preliminary proposal.

898 Master's Research
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 master's students in the Building Construction Management major.

Master's degree research paper.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to master's students in Building Construction Management.

Master's thesis research.

312 Mass Transfer and Separations
Spring. 4(5-0) P: (CHE 201 and MTH 235 or concurrently) R: Open only to students in the College of Engineering.


316 Unit Operations Laboratory
Spring. 3(1-6) P: (CHE 311 and CHE 312 or concurrently and CHE 321 or concurrently and CHE 431 or concurrently) and completion of Tier I writing requirement. R: Open only to students in the Department of Chemical Engineering.


321 Thermodynamics for Chemical Engineering
Spring. 4(5-0) P: (CHE 201)


422 Transport Phenomena
Spring. 3(3-0) P: (CHE 311 and CHE 312) Mathematical and physical analogies among mass, energy and momentum transfer processes. Dimensional analysis and solutions to multivariable boundary value problems. Numerical solutions to nonlinear problems.

431 Chemical Reaction Engineering
Spring. 3(3-0) P: (CHE 311 and CHE 312 or concurrently and CHE 321 or concurrently) R: Open only to juniors or seniors in the Chemical Engineering major.


432 Process Dynamics and Control
Fall. 3(3-0) P: (CHE 431)

Mathematical modeling of process dynamics. Control theory. Design of control systems and specification of control hardware. Integration of control theory with modern practice.

433 Process Design and Optimization I
Fall. 4(5-0) P: (CHE 432 or concurrently) and completion of Tier I writing requirement. R: Open only to students in the Department of Chemical Engineering. Applications of chemical engineering principles in design calculations. Selection of optimum design. Influence of design on capital investment, operating cost, product loss and quality. Mathematical programming methods for optimization.

434 Process Design and Optimization II
Spring. 2(0-4) P: (CHE 433)


CHEMICAL ENGINEERING

Department of Chemical Engineering and Materials Science

201 Material and Energy Balances
Fall, Spring. 3(4-0): P: (MTH 133 and (CEM 142 or CEM 143) and (CEM 152)) R: Open only to students in the College of Engineering.

Chemical engineering calculations. Synthesis of chemical process systems. Analysis of chemical processes using material and energy balances. Enthalpy calculations for changes in temperature, phase transitions, and chemical reactions.

202 Chemical Engineering as a Profession
Fall. 1(2-0) P: (CHE 201 or concurrently) RB: Junior standing in chemical engineering R: Open only to students in the Chemical Engineering major.

Professional aspects of chemical engineering. Communication skills, professionalism and ethics, teamwork skills, contemporary engineering issues, career planning, project management, industrial processes.

311 Fluid Flow and Heat Transfer
Fall, 4(5-0) P: (CHE 201 and concurrently and MTH 235 or concurrently) R: Open only to students in the College of Engineering.


CELL AND MOLECULAR BIOLOGY

College of Natural Science

800 Cell and Molecular Biology Seminar
Fall, Spring. 1(1-0) A student may earn a maximum of 5 credits in all enrollments for this course. R: Open only to students in the Cell and Molecular Biology major.

Current literature in such areas of cell and molecular biology as gene expression, intracellular transport, cell signaling, regulation of cell growth and cell structure.