CE - CIVIL ENGINEERING (CE)

CE 101 - Engineering Surveying 2 Credits

Hours: 0R-6L-2C
Term Available: F
Graduate Studies Eligible: No
Prerequisites: None

Covers basic principles and practices of surveying. Measurement through the application of surveying techniques; theory of errors and their analysis; concepts of horizontal, vertical, and angular measurement; coordinate systems; basic surveying operations and computations; reading and interpretation of building, highway, and/or bridge plans; traverse computations; applications to construction and design.

CE 110 - Computer Applications in GIS 4 Credits

Hours: 4R-0L-4C
Graduate Studies Eligible: No
Prerequisites: None

CE 111 - Geographical Information Systems 2 Credits

Hours: 2R-0L-2C
Term Available: W
Graduate Studies Eligible: No
Prerequisites: None

The course covers introductory concepts of geographical information systems and related technologies. Topics covered will relate to the use, collection, creation, and analysis of spatial data in applying GIS and related technologies to civil engineering projects.

CE 199 - Professional Experience 1 Credit

Hours: 1R-0L-1C
Term Available: F,W,S
Graduate Studies Eligible: No
Prerequisites: None

The professional experiences course captures the practical work experiences related to the student's academic discipline. Students are required to submit a formal document of their reflections, which communicates how their employment opportunity reinforced and enhanced their academic studies.

CE 205 - Thermodynamics 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: No
Prerequisites: MA 112 or MA 107

Covers first law of thermodynamics, second law of thermodynamics, concept of entropy, simple process analysis, properties of pure substances, equations of state, and state diagrams. Stresses use of property tables and charts and application of the first and the second laws to open and closed systems undergoing changes.

CE 250 - Sustainable Civil Engineering Design 2 Credits

Hours: 2R-0L-2C
Term Available: W
Graduate Studies Eligible: No
Prerequisites: EM 103

An introduction to sustainable design of civil engineering systems. Includes treatment of current issues as they relate to design and construction for economic, environmental and social aspects of civil engineering.

CE 303 - Engineering Economy 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: No
Prerequisites: None

Emphasizes time value of money and factors related thereto. Familiarizes students with concepts of annual cost, present worth, and minimum rate of return as tools for consideration of economic factors pertinent to the selection of alternate solutions to engineering problems. Students may not receive credit towards graduation for both CE303 and any of EMGT467 or EMGT567.

CE 305 - Civil Engineering Practice I 4 Credits

Hours: 4R-0L-4C
Graduate Studies Eligible: No
Prerequisites: None

CE 306 - Civil Engineering Practice II 4 Credits

Hours: 0R-0L-4C
Graduate Studies Eligible: No
Prerequisites: None

CE 310 - Computer Applications in Civil Engineering 2 Credits

Hours: 2R-0L-2C
Term Available: S
Graduate Studies Eligible: No
Prerequisites: EM 202 and EM 203

Students develop solutions to a variety of civil engineering problems using application programs such as Mathcad and Excel. Emphasis is made on problem solving approach and structured programming with software tools useful to civil engineering computation and design.

CE 320 - Civil Engineering Materials 4 Credits

Hours: 3R-3L-4C
Term Available: S
Graduate Studies Eligible: No
Prerequisites: None

A study of the origin, nature, performance and selection criteria of various basic materials used in the practice of civil engineering. These include aggregates, portland cement, concrete, and bituminous materials. Emphasis will be placed on standard methods of testing and characterization as related to the mechanical behavior of materials.

CE 321 - Structural Mechanics I 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: No
Prerequisites: EM 203 or EM 204

Classical structural analysis. Idealizations, load path, reactions and internal forces, approximate analysis, and displacements.

CE 336 - Soil Mechanics 4 Credits

Hours: 3R-3L-4C
Term Available: F
Graduate Studies Eligible: No
Prerequisites: (EM 203 and EM 301) or (EM 204 and EM 301)

Introduces the student to the fundamental concepts of soil mechanics. Covers types and properties of soils, lateral and vertical pressures, settlement and consolidation, strength and seepage studies. Includes laboratory investigation of soil properties.

CE 371 - Hydraulic Engineering 4 Credits

Hours: 3R-3L-4C
Term Available: F
Graduate Studies Eligible: No
Prerequisites: EM 301

Application of basic fluid mechanics principles to the fields of hydraulics and water resources. Topics covered include: open channel flow, closed conduit flow, flow measurement, and turbomachinery. Stresses practical applications in the laboratory.

CE 380 - Introduction to Transportation Engineering 4 Credits

Hours: 4R-0L-4C
Term Available: S
Graduate Studies Eligible: No
Prerequisites: CE 101 (may be taken concurrently)

Study of transportation functions and transportation systems; measuring and estimating demand; characteristics of transportation modes, interactions between modes, and mode interfaces; social, environmental, technological, economic, and public policy impacts; techniques of transportation system planning, design, and operation, with an emphasis on highway geometric design.

CE 400 - Career Preparation Seminar 0 Credits

Hours: 1R-0L-0C
Term Available: S
Graduate Studies Eligible: No
Prerequisites: CE 488

Preparation for the student to become a practicing engineer. Topics include Civil Engineering job expectations, continuing education, legal considerations, professionalism, consumer topics, and financial considerations.

CE 420 - Consulting Engineering Seminar 2 Credits

Hours: 2R-0L-2C
Graduate Studies Eligible: No
Prerequisites: None

Discusses problems in the field of consulting engineering; includes seminars presented by practicing consulting engineers and a suitable project to practice consulting skills. Cross-listed with BE 400, CHE 420, ECE 466, and ME 420.

CE 421 - Structural Mechanics II 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: Yes
Prerequisites: CE 321

Hand methods for structural analysis of indeterminate structures: approximating drift of frames and solid walls, force method, moment distribution method, distribution of shear when there is a rigid diaphragm, and in-plane diaphragm forces.

CE 431 - Structural Design In Steel I 3 Credits

Hours: 3R-0L-3C
Term Available: S
Graduate Studies Eligible: No
Prerequisites: CE 321

Covers the analysis and design of the basic elements of a steel structure using Load and Resistance Factor Design specifications. Includes tension and compression members, beams, beam-columns and connections.

CE 432 - Structural Design in Concrete I 3 Credits

Hours: 3R-0L-3C
Term Available: W
Graduate Studies Eligible: No
Prerequisites: CE 321

Deals with the analysis and design of reinforced concrete beams, floor slabs, and columns using the Ultimate Strength Design procedure.

CE 436 - Foundation Engineering 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: Yes
Prerequisites: CE 336 and CE 432

Covers the application of soil mechanics principles to foundation problems. Includes design of building foundations and retaining walls, stability analysis of open cuts and slopes, dewatering methods, and a study of the influence of local geology.

CE 441 - Construction Engineering 2 Credits

Hours: 2R-0L-2C
Term Available: W
Graduate Studies Eligible: No
Prerequisites: None

Covers planning and scheduling techniques for construction engineering: Gantt charts, critical path method, precedence diagramming method, activity on arrow and PERT methods, resource allocation, and time-cost tradeoffs.

CE 442 - Cost Engineering 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: Yes
Prerequisites: None

An investigation of some of the cost accounting, cost management and estimating techniques which are used in the construction industry. Various types of estimates will be considered, as will their multiple applications for project management. Special attention will be given to the preparation of detailed estimates based on quantity take-offs and to analyses of production productivity.

CE 445 - Construction Methods & Equipment 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: Yes
Prerequisites: CE 201 and CE 336

A study of economics, fundamental concepts and functional applications of major categories of construction equipment. Operational characteristics, capability and applicability of equipment to heavy, highway and major building construction projects.

CE 450 - Civil Engineering Codes & Regulations 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: No
Prerequisites: (CE 321 and CE 471) or CE 486 (may be taken concurrently)
Corequisites: CE 486

Codes and regulations provide a baseline of expectation for civil engineering practice, and in turn, engineers influence the codes and regulations to create new best practices. This course examines how civil engineers interact with public policy and the legal system to work within CE codes and regulations. This course also includes discussion around the ASCE Code of Ethics and how it relates to the need for community engagement, professional norms, and professional best practices that impact engineering practice.

CE 460 - Introduction to Environmental Engineering 4 Credits

Hours: 4R-0L-4C
Term Available: S
Graduate Studies Eligible: No
Prerequisites: EM 301 or CHE 301 or ES 212

Introduction to water pollution control, air pollution control, and solid and hazardous waste management. Topics include water treatment, wastewater treatment, impacts of pollutants on lakes and streams, and stream and air quality modeling.

CE 461 - Environmental Engineering Laboratory 2 Credits

Hours: 1R-3L-2C
Term Available: S
Graduate Studies Eligible: No
Prerequisites: None
Corequisites: CE 460

Emphasizes laboratory methods and interpretation of laboratory results for chemical analysis of water and wastewater.

CE 471 - Water Resources Engineering 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: No
Prerequisites: EM 301 or CHE 301 or ES 212

Presents an overview of the engineering, planning, design, and operation of various water resources projects. Topics include surface and groundwater hydrology, sanitary and storm sewer design, dams and reservoirs, water law, wetlands, and nonpoint source pollution.

CE 480 - Geometric Design of Highways and Streets 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: Yes
Prerequisites: CE 380

Highway planning and design with evaluation of multiple alignment alternatives; geometric design of highways: horizontal and vertical alignment, cross-sectional design; intersection design; earthwork measurements and quantities; reverse curve design; legal aspects of transportation engineering; proper use of the American Association of State Highway and Transportation Officials (AASHTO) design guidelines.

CE 481 - Traffic Analysis and Design 4 Credits

Hours: 4R-0L-4C
Term Available: See Department
Graduate Studies Eligible: Yes
Prerequisites: CE 380

Study of fundamentals of traffic engineering; components of the traffic system; intersection types and design elements; basic variables of the traffic system (flow, capacity, level of service, delay); design and analysis of traffic signals and intersections; traffic control and traffic impact analysis; safety performance and traffic crash analysis; use of the Highway Capacity Manual and traffic analysis software.

CE 483 - Railroad Engineering 4 Credits

Hours: 4R-0L-4C
Term Available: See Department
Graduate Studies Eligible: Yes
Prerequisites: None

Provides an overview of rail transportation: history, organizations, economics, safety, freight operations, track-train dynamics, signals and communications, motive power and equipment, track components, construction and maintenance. The basic objective of the course is to gain an understanding of railroads as a transportation industry that merges a number of engineering fields as well as other disciplines that contribute to the success of a complex, growth- oriented industry.

CE 486 - Civil Engineering Design & Synthesis I 2 Credits

Hours: 1R-3L-2C
Term Available: F
Graduate Studies Eligible: No
Prerequisites: (RH 330 or ENGL H290) and CE 450 (may be taken concurrently) and (CE 380 and CE 336 and CE 371 and CE 441 and CE 471 and CE 460) or (CE 380 and CE 336 and CE 432 and CE 441 and CE 431 and CE 460) or (CE 380 and CE 432 and CE 441 and CE 471 and CE 431 and CE 460) or (CE 321 and CE 336 and CE 371 and CE 432 and CE 441 and CE 471) or (CE 321 and CE 336 and CE 432 and CE 441 and CE 431 and CE 460) or (CE 380 and CE 321 and CE 336 and CE 432 and CE 441 and CE 431) or (CE 380 and CE 321 and CE 336 and CE 371 and CE 431 and CE 460) or (CE 380 and CE 321 and CE 432 and CE 441 and CE 431 and CE 460) or (CE 380 and CE 321 and CE 336 and CE 441 and CE 431 and CE 460) or (CE 380 and CE 321 and CE 336 and CE 432 and CE 431 and CE 460) or (CE 380 and CE 321 and CE 336 and CE 432 and CE 441 and CE 460)

Civil engineering projects submitted by corporate and governmental sponsors will be initiated by small teams of students to implement principles used in planning, design, and synthesis. Learning objectives include contracting, concept development, concept feasibility, planning and scheduling design work, data collection for subsequent design. CE 486 Prerequisite: ENGL H290; CE 450 (may be taken concurrently). Also at least six from the following CE 321, CE 336, CE 371, CE 380, CE 431, CE 432, CE 441, CE 460, or CE 471.

CE 487 - Technical System Design & Synthesis 2 Credits

Hours: 2R-2L-2C
Term Available: W
Graduate Studies Eligible: No
Prerequisites: CE 486

Technical system design of subdisciplinary elements of civil engineering projects submitted by corporate and governmental sponsors will be completed by individual team members to fulfill the needs of a team project initiated with CE486 and continuing in CE488. The "x" will be used to identify subdiscipline designation (c = general civil design, e= environmental, g = geotechnical, s = structural, t = transportation, w = water resources).

CE 487C - Tech System Design & Synthesis 2 Credits

Hours: 2R-2L-2C
Graduate Studies Eligible: No
Prerequisites: None

Technical system design of subdisciplinary elements of civil engineering projects submitted by corporate and governmental sponsors will be completed by individual team members to fulfill the needs of a team project initiated with CE486 and continuing in CE488. The "x" will be used to identify subdiscipline designation (c = general civil design, e= environmental, g = geotechnical, s = structural, t = transportation, w = water resources).

CE 487E - Tech System Design & Synthesis 2 Credits

Hours: 2R-2L-2C
Graduate Studies Eligible: No
Prerequisites: None

CE 487G - Tech System Design & Synthesis 2 Credits

Hours: 2R-2L-2C
Graduate Studies Eligible: No
Prerequisites: None

CE 487S - Tech System Design & Synthesis 2 Credits

Hours: 2R-2L-2C
Graduate Studies Eligible: No
Prerequisites: None

CE 487T - Tech System Design & Synthesis 2 Credits

Hours: 2R-2L-2C
Graduate Studies Eligible: No
Prerequisites: None

CE 487W - Tech System Design & Synthesis 2 Credits

Hours: 2R-2L-2C
Graduate Studies Eligible: No
Prerequisites: None

CE 488 - Civil Engineering Design & Synthesis II 2 Credits

Hours: 1R-2L-2C
Term Available: W
Graduate Studies Eligible: No
Prerequisites: CE 486

Project management by small teams for civil engineering projects submitted by corporate and governmental sponsors will continue. Learning objectives include coordinate of major design work in subdisciplines, progress reporting to the client, critical path model management to keep the project on schedule to fulfill the needs of a team project initiated with CE486 and continuing in CE487.

CE 489 - Civil Engineering Design & Synthesis III 2 Credits

Hours: 1R-3L-2C
Term Available: S
Graduate Studies Eligible: No
Prerequisites: (CE 487 or CE 487G or CE 487S or CE 487T or CE 487W) and CE 488

Civil engineering projects submitted by corporate and governmental sponsors will be completed. Final recommendations and engineering designs will be presented to the sponsors with due attention to the social, economic, and environmental constraints of the project. Learning objectives include construction planning and cost, final reporting, and public presentation of findings.

CE 490 - Directed Research 1-4 Credits

Hours: 0R-0L-(1 - 4)C
Term Available: F,W,S
Graduate Studies Eligible: No
Prerequisites: None

Provides the opportunity for the civil engineering students to do a selected project of mutual interest to them and a faculty member or make up for deficiencies in transfer credit hours and topics. Credit is assigned up to 4 credits per term with a maximum of 8 credits toward graduation.

CE 491 - Directed Research 1-4 Credits

Hours: 0R-0L-(1 - 4)C
Graduate Studies Eligible: No
Prerequisites: None

CE 498 - Special Topics in Civil Engineering 1-4 Credits

Hours: (1 - 4)R-0L-(1 - 4)C
Term Available: See Department
Graduate Studies Eligible: Yes
Prerequisites: None

Advanced topics in civil engineering. A student may take the course for credit more than once provided the topics are different.

CE 510 - Environmental Engineering Externship 4 Credits

Hours: 0R-12L-4C
Term Available: See Department
Graduate Studies Eligible: Yes
Prerequisites: None

Environmental engineering externship approved by the department.

CE 520 - Structural Engineering Externship 4 Credits

Hours: 0R-12L-4C
Term Available: F,W,S
Graduate Studies Eligible: Yes
Prerequisites: CE 421 and (MA 222 or MA 212)

Structural engineering externship approved by the department.

CE 521 - Matrix Methods for Structural Analysis 4 Credits

Hours: 4R-0L-4C
Term Available: S
Graduate Studies Eligible: Yes
Prerequisites: CE 321

Derivation of the direct stiffness method for truss and frame elements. Derivation of the finite element method for 2D plate elements. Requires development of computer programs to implement the direct stiffness method.

CE 522 - Structural Dynamics 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: Yes
Prerequisites: CE 521

Analysis and behavior of structural members and systems subject to dynamic loads including basic theory for single-degree-of-freedom and multi-degree-of-freedom analytical models of civil engineering structures; seismic hazard analysis and methods of analysis for seismic loads; response spectra; time history; and linear and nonlinear methods.

CE 523 - Advanced Solid Mechanics 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: Yes
Prerequisites: None

The fundamentals of elasticity are introduced and related to various problems such as beams on elastic foundations, unsymmetrical bending, torsion of thin walled members, and curved beams. Introduction to the analysis and modeling techniques for existing and repaired structures. Design of retrofit measures for a variety of structures using advanced composite materials.

CE 524 - Building Design 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: Yes
Prerequisites: CE 421

Advanced structural analysis and design concepts for buildings: material nonlinearity, plastic design, pushover analysis, bracing, floor vibrations. Course culminates in a design project.

CE 525 - Bridge Engineering 4 Credits

Hours: 4R-0L-4C
Term Available: S
Graduate Studies Eligible: Yes
Prerequisites: CE 421 and CE 431 and CE 432

Deals with the various types of bridge structures, the materials of which they are constructed and the manner in which loads are transmitted to the foundation. Introduces concepts of bridge engineering by providing the students with the necessary knowledge and skills to apply the AASHTO LRFD specifications for the analysis and design of highway and bridge superstructure components.

CE 532 - Structural Design in Concrete II 4 Credits

Hours: 3R-3L-4C
Term Available: F
Graduate Studies Eligible: Yes
Prerequisites: CE 432

Advanced topics in reinforced concrete analysis and design such as serviceability. slender columns, two-way slabs, and strut-and-tie modeling.

CE 533 - Connections and Detailing 4 Credits

Hours: 4R-0L-4C
Term Available: S
Graduate Studies Eligible: Yes
Prerequisites: CE 431 and CE 432

Analysis and design of structural systems with emphasis on detailing requirements; behavior of bolted and welded connections, including gusset plates, moment-resistant connections, and simple connections; design and analysis of base plate and anchoring systems; and an introduction to seismic detailing requirements.

CE 535 - Structural Design in Prestressed Concrete 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: Yes
Prerequisites: CE 432

Analysis and design of prestressed concrete stru ctures. Beams, slabs, loss of prestress, deflections, precast construction.

CE 537 - Retaining Structure Design 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: Yes
Prerequisites: CE 336 and CE 432

Covers the determination of earth pressures, selection of appropriate retaining wall types, and design of commonly used retaining structures.Includes both external (geotechnical) and internal (structural) analysis.

CE 562 - Advanced Wastewater Treatment 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: Yes
Prerequisites: CE 463 or CE 460

Covers the theory, design and analysis of biological processes for the treatment of wastewater. Treatment processes include suspended and attached growth processes, aerobic and anaerobic processes, biological nutrient removal, aeration and gas transfer, and biosolids processing. Same as CHE562.

CE 563 - Advanced Water Treatment 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: Yes
Prerequisites: CE 463 or CE 460

Covers the theory, design and analysis of physical and chemical processes for the treatment of drinking water. Treatment processes include coagulation and flocculation, gravity separation, granular and membrane filtration, disinfection, air stripping, adsorption, ion exchange, and disinfection. Same as CHE563.

CE 564 - Aquatic Environmental Chemistry 4 Credits

Hours: 4R-0L-4C
Term Available: F
Graduate Studies Eligible: Yes
Prerequisites: None

Emphasis equilibrium relationships of importance in understanding both natural waters and wastewaters. The carbonate system and the concept of pH as a master variable are stressed.

CE 565 - Solid & Hazardous Waste Regulation & Treatment 4 Credits

Hours: 4R-0L-4C
Term Available: See Department
Graduate Studies Eligible: Yes
Prerequisites: CE 460

Covers solid and hazardous waste management, including characterization, collection system design, waste minimization, design of landfills and incinerators, and remediation principles.

CE 567 - Applied Hydrologic Modeling 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: Yes
Prerequisites: CE 471

Watershed planning and stormwater management strategies are examined using computer simulation models. With an emphasis on conceptual foundation, students will be introduced to some of the most widely used models in the fields of hydrology and stormwater quantity management.Topics examined include watershed loss, transform, and routing methods, as well as model configuration, calibration, and evaluation.

CE 568 - Surface Water Quality Model'g 4 Credits

Hours: 4R-0L-4C
Term Available: See Department
Graduate Studies Eligible: Yes
Prerequisites: CE 460

Covers the mathematical analysis of transport and fate of pollutants in natural surface waters and theirimpact on water quality using analytical and numerical models. Includes one- and two-dimensional steady-state and transient models. Pollutants examined include oxygen-demanding organics, nutrients and toxic compounds.

CE 570 - Modeling Open Channel Hydraulics 4 Credits

Hours: 4R-0L-4C
Term Available: See Department
Graduate Studies Eligible: Yes
Prerequisites: CE 371

Presents steady and unsteady flow problems in open channels and pipes, dealing with mechanics of flow over rigid and mobile boundaries. Covers analysis of river dynamics and hydraulic principles in stormwater conveyance through numerical and computer modeling.

CE 571 - Environmental River Mechanics 4 Credits

Hours: 3R-3L-4C
Term Available: See Department
Graduate Studies Eligible: Yes
Prerequisites: CE 371

Concepts of fluvial geomorphology and fluvial hydraulics are examined, including natural stream flow, sediment transport, and ecological processes in alluvial rivers. Students will apply these principles to solve common design problems of channel instability and rehabilitation of impaired streams. Students will visit local streams to perform field data collection of channel geometry, bed and bank material, and water quality.

CE 573 - Groundwater Analysis 4 Credits

Hours: 4R-0L-4C
Term Available: W
Graduate Studies Eligible: Yes
Prerequisites: CE 471

Covers hydrodynamics of flow through porous media. The primary emphasis is on the analysis of steady and unsteady flow in confined and unconfined aquifers. Groundwater modeling is introduced.

CE 589 - Environmental Engineering Design & Synthesis 8 Credits

Hours: 4R-12L-8C
Term Available: F,W,S
Graduate Studies Eligible: Yes
Prerequisites: None

Environmental engineering projects submitted by external sponsors are undertaken by small teams of students to develop advanced principles used in planning, design, and synthesis. Final recommendations and engineering designs are presented to the sponsors with due attention to the social, economic, and ethical constraints of the project. Each student team also prepares a manuscript of the completed project that is suitable for publication n a peer-reviewed professional journal. The final report to the sponsor and the manuscript prepared by the team must be approved by the team's graduate committee comprised of at a minimum, the course instructor, a faculty mentor from the CE department, and a faculty external to the CE department.

CE 590 - Special Problems 2-4 Credits

Hours: (2 - 4)R-0L-(2 - 4)C
Term Available: F,W,S
Graduate Studies Eligible: Yes
Prerequisites: None

Special problems or reading by special arrangement with the faculty.

CE 597 - Special Projects in Civil Engineering 1-4 Credits

Hours: 0R-0L-(1 - 4)C
Term Available: F,W,S
Graduate Studies Eligible: Yes
Prerequisites: None

A special project, or series of problems, or research problem is assigned to or selected by the student. A comprehensive report must be submitted at the conclusion of the project. Not to be used as a substitute for CE 599, Thesis Research. Variable credit. May be repeated up to a maximum of eight credits.

CE 598 - Special Topics in Civil Engineering 0-4 Credits

Hours: 0R-0L-(0 - 4)C
Term Available: F,W,S
Graduate Studies Eligible: Yes
Prerequisites: None

Studies in advanced topics of current interest.

CE 599 - Thesis Research 0-12 Credits

Hours: 0R-0L-(0 - 12)C
Term Available: F,W,S
Graduate Studies Eligible: Yes
Prerequisites: None

Graduate students only. Credits as assigned; however, not more than 12 credits will be applied toward the requirements of the M.S. degree.

CE 699 - Professional Experience 1 Credit

Hours: 1R-0L-1C
Term Available: F,W,S
Graduate Studies Eligible: Yes
Prerequisites: None

The professional experiences course captures the practical work experiences related to the student's academic discipline. Students are required to submit a formal document of their reflections, which communicates how their employment opportunity reinforced and enhanced their academic studies. The work experiences should be informative or integral to the advancement or completion of the student's program requirements.