CIVIL AND ENVIRONMENTAL ENGINEERING (CIV ENG)

Civil and Environmental Engineering Courses

CIV ENG 150 Builders for Civilization and Environment
3 cr. Undergraduate.
Explores the role of civil engineering in society through the use of case studies, including water and society, bridges, building and transportation.
Prerequisites: none.
General Education Requirements: Civics and Perspectives
Last Taught: Summer 2025, Fall 2008, Fall 2007, Fall 2006.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 201 Statics
3 cr. Undergraduate.
Principles of mechanics force systems, equilibrium structures, distributed forces, centroids and friction.
Prerequisites: MATH 232(P).
Last Taught: Spring 2021, Fall 2020, Spring 2020, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 202 Dynamics
3 cr. Undergraduate.
Kinematics and kinetics of particles and rigid bodies with applications of Newton's second law and the principles of work-energy and impulse momentum.
Prerequisites: CIV ENG 201(P) or CIV ENG 203(P), MATH 232(C), and PHYSICS 209(C).
Last Taught: Fall 2025, Spring 2025, Fall 2024, Summer 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 203 Introduction to Solid Mechanics
4 cr. Undergraduate.
Topics in statics and strength of materials, including vector mechanics, equilibrium, structural analysis, internal forces, friction, moment of inertia, centroids, stress, strains, torsion, beam bending, shear and moment diagrams, deflection, and stress transformation.
Prerequisites: sophomore standing and MATH 231(C) or (P).
Last Taught: Fall 2025, Spring 2025, Fall 2024, Summer 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 250 Engineering Surveying
3 cr. Undergraduate.
Horizontal and vertical distance measurement, angles and direction, traverses, errors, control and construction surveys, coordinate systems, land records, and coordinate geometry. Office and field practice.
Prerequisites: IND ENG 111(P).
Last Taught: Fall 2025, Fall 2024, Fall 2023, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 260 Software Applications for Civil Engineering
3 cr. Undergraduate.
General knowledge and techniques in using computer software in civil engineering design/ Software packages include Autodesk Civil 3D and Revit Structure.
Prerequisites: none.
Course Rules: Previously CIV ENG 380 and CIV ENG 480.
Last Taught: Spring 2025, Spring 2024, Fall 2023, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 280 Computer Based Engineering Analysis
3 cr. Undergraduate.
Computer based methods for analysis of data and relationships in engineering practice. Data reliability, experimental design, statistical significance, database systems, curve fitting, interpretation of relationships.
Prerequisites: COMPSCI 132(P) or one sem H.S. programming; and MATH 231(P) or MATH 226(P).
Last Taught: Fall 2020, Spring 2020, Fall 2019, Spring 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 303 Strength of Materials
3 cr. Undergraduate.
Stress and strain, torsion, bending of beams, shearing stress in beams, combined stresses, principal stresses, defections of beams, statically indeterminate members and columns.
Prerequisites: CIV ENG 201(P) or CIV ENG 203(C); and MATH 233(C) and PHYSICS 209(P).
Course Rules: Lec and lab.
Last Taught: Summer 2021, Spring 2021, Fall 2020, Spring 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 311 Introduction to Energy, Environment and Sustainability
3 cr. Undergraduate.
Energy system and resources, environmental system and resources, global climate change, life cycle assessment, green chemistry and materials, sustainable technologies.
Prerequisites: sophomore standing.
Last Taught: Fall 2025, Fall 2024, Fall 2023, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 320 Introduction to Air Quality Engineering
3 cr. Undergraduate.
Covers air pollution sources, transport, health and environmental impacts, monitoring methods, and engineering control technologies, including traditional systems and emerging solutions like CCUS, to protect air quality, public health, and address climate and sustainability challenges.
Prerequisites: sophomore standing.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 335 Soil Mechanics
3 cr. Undergraduate.
Fundamentals of soil mechanics; soil classification; seepage analysis; principle of effective stress; stress distribution; 1-D consolidation theory; shear strength; laboratory experience.
Prerequisites: engineering major; CIV ENG 203(P) or CIV ENG 303(P); and MECHENG 320(C); or graduate standing.
Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 360 Introduction to Structural Analysis
3 cr. Undergraduate.
Elementary structural analysis techniques; beams, trusses, statically determinate frames, influence lines; analysis of indeterminate structures by superposition and computer analysis.
Prerequisites: CIV ENG 203(P) or CIV ENG 303(P); ELECENG 234(C).
Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 372 Introduction to Structural Design
4 cr. Undergraduate.
Intro to design of reinforced concrete, steel, and wood structures; material properties; codes; design for flexure, shear and axial loads; connections.
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P); Math 233(C).
Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 401 Intermediate Strength of Materials
3 cr. Undergraduate/Graduate.
Area moment, conjugate beam, deflection due to shear, bending of unsymmetrical beams, curved beams, shear flow, shear center, stresses in open sections, theories of failure, plastic stress-strain relations, plastic deformation, limit analysis, and energy methods.
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 401G Intermediate Strength of Materials
3 cr. Undergraduate/Graduate.
Area moment, conjugate beam, deflection due to shear, bending of unsymmetrical beams, curved beams, shear flow, shear center, stresses in open sections, theories of failure, plastic stress-strain relations, plastic deformation, limit analysis, and energy methods.
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 411 Engineering Principles of Water Resources Design
3 cr. Undergraduate/Graduate.
Principles of hydraulics; steady and non-steady flow in closed conduits and open channels; hydraulic design of structures, surge tanks; hydraulic model studies.
Prerequisites: junior standing or above, advanced to Engineering major, and MECHENG 320(C); or graduate standing.
Last Taught: Fall 2025, Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 411G Engineering Principles of Water Resources Design
3 cr. Undergraduate/Graduate.
Principles of hydraulics; steady and non-steady flow in closed conduits and open channels; hydraulic design of structures, surge tanks; hydraulic model studies.
Prerequisites: junior standing or above, advanced to Engineering major, and MECHENG 320(C); or graduate standing.
Last Taught: Fall 2025, Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 412 Applied Hydrology
3 cr. Undergraduate/Graduate.
Applied hydrology with emphasis on analysis of rainfall, runoff and streamflow processes, hydrologic forecasting and simulation, urban hydrology, hydrologic design and modelling.
Prerequisites: junior standing; MATH 233(P) & MECHENG 320(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 412G Applied Hydrology
3 cr. Undergraduate/Graduate.
Applied hydrology with emphasis on analysis of rainfall, runoff and streamflow processes, hydrologic forecasting and simulation, urban hydrology, hydrologic design and modelling.
Prerequisites: junior standing; MATH 233(P) & MECHENG 320(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 413 Environmental Engineering
3 cr. Undergraduate/Graduate.
Water pollution and control; hazardous substances and risk assessment; water and wastewater treatment systems; air-pollution and emission control; solid wastes; design of treatment facilities.
Prerequisites: junior standing and advanced to major in an Engineering major or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 413G Environmental Engineering
3 cr. Undergraduate/Graduate.
Water pollution and control; hazardous substances and risk assessment; water and wastewater treatment systems; air-pollution and emission control; solid wastes; design of treatment facilities.
Prerequisites: junior standing and advanced to major in an Engineering major or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 431 Materials of Construction
3 cr. Undergraduate/Graduate.
Investigation covering engineering properties of metals, timber, concrete, masonry, plain and reinforced plastics, glues; thermal effects.
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 431G Materials of Construction
3 cr. Undergraduate/Graduate.
Investigation covering engineering properties of metals, timber, concrete, masonry, plain and reinforced plastics, glues; thermal effects.
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 455 Construction Planning, Equipment, and Methods
3 cr. Undergraduate/Graduate.
This course introduces students to construction planning, equipment, and selected construction methods. This includes economy, selection, the productivity of common construction equipment, and construction procedures for industrial, heavy civil, and commercial construction projects.
Prerequisites: junior standing or greater and CIV ENG 431(P); or graduate standing.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 455G Construction Planning, Equipment, and Methods
3 cr. Undergraduate/Graduate.
This course introduces students to construction planning, equipment, and selected construction methods. This includes economy, selection, the productivity of common construction equipment, and construction procedures for industrial, heavy civil, and commercial construction projects.
Prerequisites: junior standing or greater and CIV ENG 431(P); or graduate standing.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 456 Foundation Engineering
3 cr. Undergraduate/Graduate.
Site investigation; foundation bearing capacity and settlement; design of spread and combined footings; lateral earth pressures; retaining wall design; slope stability analysis; pile foundations.
Prerequisites: junior standing; CIV ENG 335(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 456G Foundation Engineering
3 cr. Undergraduate/Graduate.
Site investigation; foundation bearing capacity and settlement; design of spread and combined footings; lateral earth pressures; retaining wall design; slope stability analysis; pile foundations.
Prerequisites: junior standing; CIV ENG 335(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 463 Introduction to Finite Elements
3 cr. Undergraduate/Graduate.
Generation and assembly of finite element matrices in one- and two-dimensional problems. Modeling and practical applications in solid mechanics, heat transfer and fluid flow.
Prerequisites: junior standing; CIV ENG 203(P), CIV ENG 303(P), or ELECENG 234(P); and MECHENG 311(C), MECHENG 320(C), or MECHENG 321(C).
Course Rules: CIV ENG 463 and MECHENG 463 are jointly offered and count as repeats of one another.
Last Taught: Fall 2025, Fall 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 463G Introduction to Finite Elements
3 cr. Undergraduate/Graduate.
Generation and assembly of finite element matrices in one- and two-dimensional problems. Modeling and practical applications in solid mechanics, heat transfer and fluid flow.
Prerequisites: junior standing; CIV ENG 203(P), CIV ENG 303(P), or ELECENG 234(P); and MECHENG 311(C), MECHENG 320(C), or MECHENG 321(C).
Course Rules: CIV ENG 463 and MECHENG 463 are jointly offered and count as repeats of one another.
Last Taught: Fall 2025, Fall 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 466 Design of Composite Structures
3 cr. Undergraduate/Graduate.
Hands-on design, analysis, and manufacturing of composite fiber reinforced plastic beams, columns, and plates; failure analysis and damage tolerance design of composite structures; bolted and bonded joints.
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P)
Course Rules: CIV ENG 466 and MECHENG 466 are jointly offered and count as repeats of one another.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 466G Design of Composite Structures
3 cr. Undergraduate/Graduate.
Hands-on design, analysis, and manufacturing of composite fiber reinforced plastic beams, columns, and plates; failure analysis and damage tolerance design of composite structures; bolted and bonded joints.
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P)
Course Rules: CIV ENG 466 and MECHENG 466 are jointly offered and count as repeats of one another.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 467 Aerospace Structures
3 cr. Undergraduate/Graduate.
A comprehensive study of aerospace structural engineering, covering analysis and testing methods for aircraft and launch vehicles. Examines design standards, failure analysis, and structural verification processes while focusing on critical components.
Prerequisites: CIV ENG 203(P); or graduate standing.
Course Rules: CIV ENG 467 and MECHENG 467 are jointly offered and count as repeats of one another.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 467G Aerospace Structures
3 cr. Undergraduate/Graduate.
A comprehensive study of aerospace structural engineering, covering analysis and testing methods for aircraft and launch vehicles. Examines design standards, failure analysis, and structural verification processes while focusing on critical components.
Prerequisites: CIV ENG 203(P); or graduate standing.
Course Rules: CIV ENG 467 and MECHENG 467 are jointly offered and count as repeats of one another.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 469 Introduction to Biomechanical Engineering
3 cr. Undergraduate/Graduate.
Mathematical modeling of human body; dynamics of human motion; neuromuscular control human movement; stress analysis of bones and joints; concurrent mechanical problems in medicine.
Prerequisites: CIV ENG 202(P) and CIV ENG 303 (P); or consent of instructor.
Course Rules: MECHENG 469 and CIV ENG 469 are jointly offered and count as repeats of one another.
Last Taught: Fall 2012.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 469G Introduction to Biomechanical Engineering
3 cr. Undergraduate/Graduate.
Mathematical modeling of human body; dynamics of human motion; neuromuscular control human movement; stress analysis of bones and joints; concurrent mechanical problems in medicine.
Prerequisites: CIV ENG 202(P) and CIV ENG 303 (P); or consent of instructor.
Course Rules: MECHENG 469 and CIV ENG 469 are jointly offered and count as repeats of one another.
Last Taught: Fall 2012.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 490 Transportation Engineering
3 cr. Undergraduate/Graduate.
Technological and common elements of all modes of transportation; their effect on performance, demand, and outputs of a transportation system. Development of new transportation systems.
Prerequisites: junior standing or higher, advanced to an Engineering major, and IND ENG 367(C); or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 490G Transportation Engineering
3 cr. Undergraduate/Graduate.
Technological and common elements of all modes of transportation; their effect on performance, demand, and outputs of a transportation system. Development of new transportation systems.
Prerequisites: junior standing or higher, advanced to an Engineering major, and IND ENG 367(C); or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 492 Environmental Impact Assessment
3 cr. Undergraduate/Graduate.
Study and evaluation of the impacts of large scale projects on the quality of the environment with emphasis on the assessment of physical and community impacts. Impact statement preparation.
Prerequisites: senior standing.
Last Taught: Spring 2018, Spring 2016.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 492G Environmental Impact Assessment
3 cr. Undergraduate/Graduate.
Study and evaluation of the impacts of large scale projects on the quality of the environment with emphasis on the assessment of physical and community impacts. Impact statement preparation.
Prerequisites: senior standing.
Last Taught: Spring 2018, Spring 2016.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 494 Principles of Civil Engineering Design
1 cr. Undergraduate.
Project identification and planning for senior design project; proposals, project management and team procedures. Technical communications. Professional engineering responsibilities. Intended for first semester seniors.
Prerequisites: senior standing in Civil Engineering, CIV ENG 335(C), CIV ENG 372(C), CIV ENG 411(C), CIV ENG 413(C), and CIV ENG 490(C).
Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 495 Senior Design
3 cr. Undergraduate.
Team design project involving application of fundamental civil engineering concepts. Discussion of specifications, contracts and implementation. Written and oral presentations. Intended for second semester seniors.
Prerequisites: CIV ENG 411(P), CIV ENG 413(P), and CIV ENG 494(P); and CIV ENG 335(P), CIV ENG 372(P), and CIV ENG 490(P) for Civil Engineering students; or CIV ENG 311(P), CIV ENG 412(P), and CIV ENG 521(C) for Environmental Engineering students; or consent of instructor.
Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 496 Fundamentals of Engineering Exam Seminar
0 cr. Undergraduate.
Review of topics on the Fundamentals of Engineering (FE) exam and presents problems from the various sub-areas. The (FE) exam is the first of the two exams engineers for the professional license.
Prerequisites: senior standing; Civil Engineering or Environmental Engineering major.
Course Rules: Fee for 1 cr assessed. Satisfactory/Unsatisfactory only. Counts as a repeat of CIV ENG 691 with similar topic.
Last Taught: Spring 2025, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 499 Ad Hoc:
1-12 cr. Undergraduate.
Course created expressly for offering in a specified enrollment period.
Prerequisites: none; additional prerequisites may be assigned to specific topic.
Course Rules: May be retaken with change in topic. Requires department and associate dean approval.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 502 Experimental Mechanics & Nondestructive Evaluation
3 cr. Undergraduate/Graduate.
Basic stress strain relations, use of electrical resistance strain gages, optical methods for strain measurement, wave propagation, acoustic emission, infrared methods. Applications to defect defection, materials characterization and structural health monitoring.
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P).
Last Taught: Fall 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 502G Experimental Mechanics & Nondestructive Evaluation
3 cr. Undergraduate/Graduate.
Basic stress strain relations, use of electrical resistance strain gages, optical methods for strain measurement, wave propagation, acoustic emission, infrared methods. Applications to defect defection, materials characterization and structural health monitoring.
Prerequisites: junior standing and CIV ENG 203(P) or CIV ENG 303(P).
Last Taught: Fall 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 511 Water Supply and Sewerage
3 cr. Undergraduate/Graduate.
Resources of water supply quality and quantity requirements. Principles of hydraulic design of water supply and sewerage systems; pumping stations. Principles of sewage disposal. Problems of management involving hydrological, engineering, institutional, legal and economic aspects.
Prerequisites: junior standing; CIV ENG 411(P).
Course Rules: Design project.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 511G Water Supply and Sewerage
3 cr. Undergraduate/Graduate.
Resources of water supply quality and quantity requirements. Principles of hydraulic design of water supply and sewerage systems; pumping stations. Principles of sewage disposal. Problems of management involving hydrological, engineering, institutional, legal and economic aspects.
Prerequisites: junior standing; CIV ENG 411(P).
Course Rules: Design project.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 521 Water Quality Assessment
3 cr. Undergraduate/Graduate.
Laboratory techniques for detecting and measuring physical, chemical and biological characteristics of water and wastewater. Water quality requirements. Design of sampling programs.
Prerequisites: senior standing; CIV ENG 411(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 521G Water Quality Assessment
3 cr. Undergraduate/Graduate.
Laboratory techniques for detecting and measuring physical, chemical and biological characteristics of water and wastewater. Water quality requirements. Design of sampling programs.
Prerequisites: senior standing; CIV ENG 411(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 555 Sustainable Construction Materials and Technologies
3 cr. Undergraduate/Graduate.
Sustainable construction materials and methodologies related to commercial construction, LEED/Green certifications, material selection.
Prerequisites: junior standing.
Last Taught: Spring 2025, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 555G Sustainable Construction Materials and Technologies
3 cr. Undergraduate/Graduate.
Sustainable construction materials and methodologies related to commercial construction, LEED/Green certifications, material selection.
Prerequisites: junior standing.
Last Taught: Spring 2025, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 560 Intermediate Structural Analysis
3 cr. Undergraduate/Graduate.
Topics in traditional analysis methods; indeterminate structures, load & load paths, moment distribution, approximate methods, elementary plate analysis.
Prerequisites: junior standing, CIV ENG 360(P), AND CIV ENG 372(P).
Last Taught: Fall 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 560G Intermediate Structural Analysis
3 cr. Undergraduate/Graduate.
Topics in traditional analysis methods; indeterminate structures, load & load paths, moment distribution, approximate methods, elementary plate analysis.
Prerequisites: junior standing, CIV ENG 360(P), AND CIV ENG 372(P).
Last Taught: Fall 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 571 Design of Concrete Structures
3 cr. Undergraduate/Graduate.
Topics in reinforced concrete design; indeterminate reinforced concrete beams and frames; length effect in columns; torsion; two way floor systems; yield line theory.
Prerequisites: junior standing; CIV ENG 303(P) or CIV ENG 401(C), CIV ENG 360(C), and CIV ENG 372(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 571G Design of Concrete Structures
3 cr. Undergraduate/Graduate.
Topics in reinforced concrete design; indeterminate reinforced concrete beams and frames; length effect in columns; torsion; two way floor systems; yield line theory.
Prerequisites: junior standing; CIV ENG 303(P) or CIV ENG 401(C), CIV ENG 360(C), and CIV ENG 372(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 572 Design of Steel Structures
3 cr. Undergraduate/Graduate.
Topics in design of steel structures; tension, compression, and beam members; combined axial and bending; connections; frames; serviceability.
Prerequisites: junior standing, CIV ENG 303(P) or CIV ENG 401(C), CIV ENG 360(C), and CIV ENG 372(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 572G Design of Steel Structures
3 cr. Undergraduate/Graduate.
Topics in design of steel structures; tension, compression, and beam members; combined axial and bending; connections; frames; serviceability.
Prerequisites: junior standing, CIV ENG 303(P) or CIV ENG 401(C), CIV ENG 360(C), and CIV ENG 372(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 573 Design of Masonry and Wood Structures
3 cr. Undergraduate/Graduate.
Properties of masonry materials, loads, design codes, reinforced & unreinforced members, composite & cavity walls, shear walls. Properties of wood, design of wood structural members by LRFD including beams, columns and connections.
Prerequisites: junior standing; CIV ENG 360(C) and CIV ENG 372(P).
Last Taught: Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 573G Design of Masonry and Wood Structures
3 cr. Undergraduate/Graduate.
Properties of masonry materials, loads, design codes, reinforced & unreinforced members, composite & cavity walls, shear walls. Properties of wood, design of wood structural members by LRFD including beams, columns and connections.
Prerequisites: junior standing; CIV ENG 360(C) and CIV ENG 372(P).
Last Taught: Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 574 Design of Prestressed Concrete Structures
3 cr. Undergraduate/Graduate.
Design of prestressed concrete structures; methods of prestressing; loss of prestress; design for flexure, shear, torsion; camber and deflections; continuity; connections; fire rating; circular prestressing.
Prerequisites: junior standing; CIV ENG 360(C), CIV ENG 372(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 574G Design of Prestressed Concrete Structures
3 cr. Undergraduate/Graduate.
Design of prestressed concrete structures; methods of prestressing; loss of prestress; design for flexure, shear, torsion; camber and deflections; continuity; connections; fire rating; circular prestressing.
Prerequisites: junior standing; CIV ENG 360(C), CIV ENG 372(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 579 Earthquake Engineering
3 cr. Undergraduate/Graduate.
Earthquake mechanics and effects, structural dynamics, seismic hazard analysis, design guidelines, design of steel and concrete buildings for earthquake loads.
Prerequisites: senior standing; CIV ENG 571(P) or CIV ENG 572(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of CIV ENG 891 with similar topic.
Last Taught: Spring 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 579G Earthquake Engineering
3 cr. Undergraduate/Graduate.
Earthquake mechanics and effects, structural dynamics, seismic hazard analysis, design guidelines, design of steel and concrete buildings for earthquake loads.
Prerequisites: senior standing; CIV ENG 571(P) or CIV ENG 572(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of CIV ENG 891 with similar topic.
Last Taught: Spring 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 580 Engineering Analysis in Applied Mechanics
3 cr. Undergraduate/Graduate.
Engineering analysis of initial and boundary value problems in applied mechanics. Application of various methods to investigate a variety of engineering situations.
Prerequisites: junior standing; ELECENG 234(P).
Course Rules: CIV ENG 580 and MECHENG 580 are jointly offered and count as repeats of one another.
Last Taught: Fall 1998, Fall 1996.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 580G Engineering Analysis in Applied Mechanics
3 cr. Undergraduate/Graduate.
Engineering analysis of initial and boundary value problems in applied mechanics. Application of various methods to investigate a variety of engineering situations.
Prerequisites: junior standing; ELECENG 234(P).
Course Rules: CIV ENG 580 and MECHENG 580 are jointly offered and count as repeats of one another.
Last Taught: Fall 1998, Fall 1996.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 590 Urban Transportation Planning
3 cr. Undergraduate/Graduate.
Techniques used to plan urban transportation systems; data collection, trip generation, trip distribution, factors underlying the choice of mode, traffic assignment, modeling and evaluation techniques.
Prerequisites: none.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 590G Urban Transportation Planning
3 cr. Undergraduate/Graduate.
Techniques used to plan urban transportation systems; data collection, trip generation, trip distribution, factors underlying the choice of mode, traffic assignment, modeling and evaluation techniques.
Prerequisites: none.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 592 Traffic Control
3 cr. Undergraduate/Graduate.
Control of transportation systems with emphasis on traffic engineering principles. Data collection, capacity analysis, traffic improvements, signalization, signs and markings, channelization, intersection, speeds and safety considerations.
Prerequisites: none.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 592G Traffic Control
3 cr. Undergraduate/Graduate.
Control of transportation systems with emphasis on traffic engineering principles. Data collection, capacity analysis, traffic improvements, signalization, signs and markings, channelization, intersection, speeds and safety considerations.
Prerequisites: none.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 594 Physical Planning and Municipal Engineering
3 cr. Undergraduate/Graduate.
Organization and structure of local government, zoning and planning, subdivision layout, street design, transit service, urban drainage, storm and sanitary sewer, water supply and other public works activities.
Prerequisites: senior standing.
Last Taught: Spring 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 594G Physical Planning and Municipal Engineering
3 cr. Undergraduate/Graduate.
Organization and structure of local government, zoning and planning, subdivision layout, street design, transit service, urban drainage, storm and sanitary sewer, water supply and other public works activities.
Prerequisites: senior standing.
Last Taught: Spring 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 596 Transportation Facilities Design
3 cr. Undergraduate/Graduate.
Physical design of transportation facilities including geometric design and terminals for highway, rail, air and water transportation. Student project work will be required.
Prerequisites: none.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 596G Transportation Facilities Design
3 cr. Undergraduate/Graduate.
Physical design of transportation facilities including geometric design and terminals for highway, rail, air and water transportation. Student project work will be required.
Prerequisites: none.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 598 Pavement Analysis and Design
3 cr. Undergraduate/Graduate.
Pavement types, design factors, traffic loading and volume, materials characterization, drainage design, flexible and rigid pavements design, stresses and deflections, overlay design, pavement rehabilitation.
Prerequisites: junior standing and CIV ENG 335(P); or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 598G Pavement Analysis and Design
3 cr. Undergraduate/Graduate.
Pavement types, design factors, traffic loading and volume, materials characterization, drainage design, flexible and rigid pavements design, stresses and deflections, overlay design, pavement rehabilitation.
Prerequisites: junior standing and CIV ENG 335(P); or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 608 Intro to Fate and Transport of Pollutants in the Environment
3 cr. Undergraduate.
Develop an understanding of the fundamentals governing fate and transport of chemical pollutants and particles, including bacteria, viruses, protozoan and nano particles in the aquatic environment and porous media including soil and filtration system.
Prerequisites: CIV ENG 413(P).
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 610 Introduction to Water and Sewage Treatment
3 cr. Undergraduate/Graduate.
Characteristics of water and sewage. Principles of physical, chemical and biological processes for water and sewage treatment. Design project.
Prerequisites: senior standing; CIV ENG 413(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 610G Introduction to Water and Sewage Treatment
3 cr. Undergraduate/Graduate.
Characteristics of water and sewage. Principles of physical, chemical and biological processes for water and sewage treatment. Design project.
Prerequisites: senior standing; CIV ENG 413(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 614 Hazardous Waste Management
3 cr. Undergraduate/Graduate.
Hazardous waste; regulatory process; fate and transport of contaminants; treatment and disposal methods; site remediation; quantitative risk assessment; design project.
Prerequisites: junior standing; CIV ENG 413(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 614G Hazardous Waste Management
3 cr. Undergraduate/Graduate.
Hazardous waste; regulatory process; fate and transport of contaminants; treatment and disposal methods; site remediation; quantitative risk assessment; design project.
Prerequisites: junior standing; CIV ENG 413(P).
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 616 Computational Hydraulics and Environmental Flows
3 cr. Undergraduate/Graduate.
Numerical analysis applied to fluid flows and transport phenomena. Applications in environmental flows, water quality models, transport of pollutant, long wave propagation, etc.
Prerequisites: junior standing and CIV ENG 411(P).
Course Rules: Counts as repeat of CIV ENG 691 with the same topic.
Last Taught: Spring 2018, Fall 2015.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 616G Computational Hydraulics and Environmental Flows
3 cr. Undergraduate/Graduate.
Numerical analysis applied to fluid flows and transport phenomena. Applications in environmental flows, water quality models, transport of pollutant, long wave propagation, etc.
Prerequisites: junior standing and CIV ENG 411(P).
Course Rules: Counts as repeat of CIV ENG 691 with the same topic.
Last Taught: Spring 2018, Fall 2015.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 691 Topics in Civil Engineering:
1-3 cr. Undergraduate/Graduate.
Topics vary. Study of topics in theory and practice of civil engineering. Specific topics and any additional prerequisites will be announced in Schedule of Classes each time the course is offered.
Prerequisites: junior standing.
Course Rules: May be retaken to a max of 6 cr.
Last Taught: Spring 2025, Fall 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 691G Topics in Civil Engineering:
1-3 cr. Undergraduate/Graduate.
Topics vary. Study of topics in theory and practice of civil engineering. Specific topics and any additional prerequisites will be announced in Schedule of Classes each time the course is offered.
Prerequisites: junior standing.
Course Rules: May be retaken to a max of 6 cr.
Last Taught: Spring 2025, Fall 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 699 Independent Study
1-3 cr. Undergraduate/Graduate.
Independent study on a topic of choice. Credit hours to be arranged between student and staff on an individual basis.
Prerequisites: junior standing and consent of instructor.
Course Rules: May be retaken to max of 6 cr toward the undergraduate degree.
Last Taught: Summer 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 699G Independent Study
1-3 cr. Undergraduate/Graduate.
Independent study on a topic of choice. Credit hours to be arranged between student and staff on an individual basis.
Prerequisites: junior standing and consent of instructor.
Course Rules: May be retaken to max of 6 cr toward the undergraduate degree.
Last Taught: Summer 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 700 CEAS Graduate Seminar
1-3 cr. Graduate.
Seminar in professional ethics, oral and written communication, contemporary social issues, career development, time management, and laboratory safety.
Prerequisites: graduate standing.
Course Rules: CIV ENG 700, COMPSCI 700, ELECENG 700, IND ENG 700, MATLENG 700 and MECHENG 700 are jointly offered and count as repeats of one another
Last Taught: Fall 2020, Spring 2020, Fall 2019, Spring 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 701 Advanced Strength of Materials
3 cr. Graduate.
Beams of elastic foundations; advanced energy methods; thick walled cylinders; torsion of non-circular sections; approximate methods for stresses in plates, stress concentrations, contact stresses, interaction curves, elastic and inelastic buckling, elasticity; matrix & tensor applications.
Prerequisites: graduate standing, CIV ENG 203(P) or CIV ENG 303(P) and CIV ENG 401(C) or consent of instructor.
Last Taught: Spring 2024, Spring 2021, Spring 2018, Fall 2016.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 702 Elastic Stability
3 cr. Graduate.
Sending of bars under simultaneous action of axial and lateral loads; buckling of compressed bars, rings, and tubes; lateral buckling of beams; torsion of i-beams; buckling of thin plates.
Prerequisites: graduate standing, CIV ENG 401(P) and ELECENG 234(P).
Last Taught: Fall 2006, Spring 1988, Spring 1986, Spring 1984.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 708 Fate and Transport of Pollutants in the Environment
3 cr. Graduate.
Develop an understanding of the fundamentals governing fate and transport of chemical pollutants and particles, including bacteria, viruses, protozoan and nano particles in the aquatic environment and porous media including soil and filtration system.
Prerequisites: graduate standing.
Last Taught: Spring 2024, Spring 2021, Spring 2019, Spring 2015.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 710 Industrial Waste Treatment
3 cr. Graduate.
Principles and theories of treating industrial wastes. Characterization of industries and their wastes. Treatment processes including tertiary and advanced wastewater separation techniques. Hazardous wastes management. Administration of industrial waste control. Programs.
Prerequisites: graduate standing; CIV ENG 521(P) and CIV ENG 610(P) or consent of instructor.
Last Taught: Spring 2010, Fall 2004, Fall 1995, Fall 1986.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 712 Ground Water Flow and Seepage
3 cr. Graduate.
Linear and non-linear seepage laws; theoretical models; electro-osmosis in soils; analytical solution to steady state problems; numerical solutions to transcient problems; analytical solutions to transient problems; experimental methods and models; design of dewatering systems.
Prerequisites: graduate standing; CIV ENG 411(P).
Last Taught: Fall 2017, Spring 2015, Spring 2011, Spring 2009.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 714 Unit Operations in Environmental Engineering
3 cr. Graduate.
Unit operations of physicochemical and biological aspects employed in water and wastewater treatments. In-situ treatment of contaminated groundwater. Theory and development of design criteria.
Prerequisites: graduate standing and CIV ENG 610(P) or consent of instructor.
Last Taught: Spring 2009, Fall 2005, Fall 2003, Spring 2001.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 716 Sediment Transport
3 cr. Graduate.
Physical properties of sediment; incipient motion, bed forms, suspended load, bed load, total load, natural river processes.
Prerequisites: graduate standing; CIV ENG 411(P).
Last Taught: Fall 2019, Spring 2018, Spring 2016, Spring 2012.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 717 Open Channel Flow
3 cr. Graduate.
Basic equations of continuity, mechanical energy and momentum; uniform, gradually varied, and spatially varied flows; hydraulic structures; governing equations of unsteady flow and numerical solutions.
Prerequisites: graduate standing; CIV ENG 411(P) or equivalent.
Last Taught: Fall 2020, Fall 2016, Spring 2010, Fall 2007.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 718 Biological Processes for Water and Wastewater Treatment
3 cr. Graduate.
Biological and engineering principles related to trickling filters, activated sludge plants, lagoons, rotating biological contactors, aerobic and anaerobic digesters, nutrient removal and bioremediation.
Prerequisites: graduate standing; CIV ENG 413(R) or CIV ENG 610(R).
Last Taught: Spring 2025, Spring 2022, Spring 2020, Spring 2017.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 719 Pollutant Dispersion Process
3 cr. Graduate.
Classical diffusion theories; longitudinal dispersion, vertical and transverse mixing in free-surface turbulent flow, application to natural channels.
Prerequisites: graduate standing; CIV ENG 411(P).
Last Taught: Fall 2021, Fall 2018, Spring 2017, Fall 2014.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 721 Advanced Water Analysis
3 cr. Graduate.
Advanced analytical methods for evaluating sources, distribution patterns, concentrations, and biological effects of pollutants in natural waters. Tracers, nuclear techniques, organics, metals, bioassays. Lecture and laboratory.
Prerequisites: graduate standing and CIV ENG 521(P) or consent of instructor.
Last Taught: Fall 2008, Fall 2002, Fall 1998, Spring 1995.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 725 Finite Element Methods in Engineering
3 cr. Graduate.
Formulation and assembly of finite elements. Tools in numerical analysis, interpolation, integration. Trusses, beams, plates, two-dimensional problems. Generalized field problems: heat transfer, fluid flow. Emphasis on practical application.
Prerequisites: graduate standing.
Last Taught: Spring 2025, Spring 2023, Spring 2020, Fall 2018.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 726 Mechanical Vibrations
3 cr. Graduate.
Free and forced vibrations of multiple degree of freedom systems using modern matrix methods.
Prerequisites: graduate standing; MECHENG 475(P) or equivalent.
Course Rules: CIV ENG 726 and MECHENG 726 are jointly offered and count as repeats of one another. Students may not receive credit for both courses.
Last Taught: Spring 2000, Spring 1999, Spring 1996, Spring 1995.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 731 Properties of Concrete
3 cr. Graduate.
Advanced course in portland cement concrete; proportioning methods, theories of hardening and setting, properties, prefabricated concrete, precast concrete, construction methods, light-weight aggregates and concrete, causes of disintegration, protective treatments, specifications, cost estimates.
Prerequisites: graduate standing and consent of instructor.
Last Taught: Fall 2024, Fall 2022, Fall 2019, Fall 2017.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 735 Advanced Soil Mechanics
3 cr. Graduate.
Advanced treatment and application of theories and principles of soil mechanics; permeability and seepage; elastic theories of stress distribution; consolidation theories; shearing strength and failure criteria; plastic equilibrium.
Prerequisites: graduate standing and CIV ENG 335(P).
Last Taught: Spring 2020, Fall 2016, Fall 2014, Fall 2011.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 747 Fatigue in Engineering Materials
3 cr. Graduate.
Influence of repeated stress in engineering design, fatigue testing machines, and procedures, factors influencing fatigue properties, theories of fatigue failure.
Prerequisites: graduate standing and CIV ENG 401(P) or consent of instructor.
Course Rules: Previously CIV ENG 732. CIV ENG 747, MATLENG 747, and MECHENG 747 are jointly offered and count as repeats of one another.
Last Taught: Fall 2024, Spring 2015, Fall 2012, Fall 2010.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 756 Advanced Foundation Engineering
3 cr. Graduate.
Critical study of actual engineering projects; introduction to existing design procedures and the basis for foundation recommendations.
Prerequisites: graduate standing; CIV ENG 456(P).
Last Taught: Spring 2021, Fall 2019, Spring 2018, Spring 2016.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 761 Advanced Structural Analysis
3 cr. Graduate.
Analysis of structures utilizing matrix stiffness techniques; material and geometric nonlinearities, volume changes, extreme loadings.
Prerequisites: graduate standing; CIV ENG 360(P); CIV ENG 463(P).
Last Taught: Spring 2019, Spring 1997, Fall 1995, Spring 1994.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 771 Advanced Concrete Design
3 cr. Graduate.
Advanced topics in design of concrete structures; structural systems & bracing, two-way slab, walls, construction phase assessment, joints & ductility, design for fire, seismic design.
Prerequisites: graduate standing; CIV ENG 571(P).
Last Taught: Spring 2025, Spring 2023, Spring 2019, Spring 2017.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 772 Advanced Steel Design
3 cr. Graduate.
Advanced topics in design of steel structures; plate girders, moment resisting frames, stability & bracing, connections, torsion, seismic design, fatigue & fracture.
Prerequisites: graduate standing; CIV ENG 572(P).
Last Taught: Fall 2025, Fall 2023, Fall 2021, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 773 Advanced Dynamics
3 cr. Graduate.
General theory of dynamic behavior from the viewpoint of Lagrangian and Hamiltonian mechanics. Application of energy principles to dynamical analysis of mechanical systems.
Prerequisites: graduate standing; MECHENG 580(P) or CIV ENG 580(P); or consent of instructor.
Course Rules: CIV ENG 773 and MECHENG 773 are jointly offered and count as repeats of one another.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 774 Shock and Vibration Analysis
3 cr. Graduate.
Dynamic response of mechanical systems to complex shock and vibration conditions; application of the eigenvalue and transform methods of analysis to the solution of engineering problems.
Prerequisites: graduate standing; MECHENG 475(P) and MECHENG 580(P).
Course Rules: CIV ENG 774 and MECHENG 774 are jointly offered and count as repeats of one another.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 775 Analysis and Design of Bridges
3 cr. Graduate.
Bridge types; loads and AASHTO specifications; analysis and design of superstructures; substructure design; computer applications.
Prerequisites: graduate standing, CIV ENG 463(P), CIV ENG 571(P), and CIV ENG 572(P); or consent of instructor.
Last Taught: Spring 2025, Spring 2021, Spring 2018, Spring 2016.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 777 Design of Multistory Buildings
3 cr. Graduate.
Topics in design of multistory building systems; planning & environmental criteria, loading, analysis, design, construction, lateral systems, foundation, cladding, building service & management.
Prerequisites: graduate standing; CIV ENG 463(P), CIV ENG 571(P), and CIV ENG 572(P).
Last Taught: Fall 2024, Fall 2022, Fall 2020, Fall 2018.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 785 Dynamics of Structures
3 cr. Graduate.
Analysis and design of structures subjected to dynamic loads; effects of damping and inelastic action; multi-degree of freedom and continuous systems; numerical techniques; seismic design.
Prerequisites: graduate standing and CIV ENG 463(P) or consent of instructor.
Last Taught: Spring 2017, Spring 2013, Spring 2011, Spring 2009.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 790 Transportation Systems Design
3 cr. Graduate.
Principles of systems analysis as they relate to the planning, design and operation of transportation systems. Model building, evaluation, systems management.
Prerequisites: graduate standing and CIV ENG 590(P).
Last Taught: Spring 2019, Fall 2013, Fall 2011, Spring 2006.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 792 Methods of Transportation Analysis
3 cr. Graduate.
Mathematical tools useful in analysis of transportation systems. Process of modeling and simulation, matrix techniques, network analysis, statistical analysis, etc. As related to transportation. Use of standard packaged computer programs. Class project may be utilized to develop these skills.
Prerequisites: graduate standing, COMPSCI 151(P) or equivalend, and CIV ENG 590(P).
Last Taught: Fall 2019, Fall 2018, Fall 2017, Fall 2016.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 794 Traffic Planning and Operations
3 cr. Graduate.
Planning and design of traffic systems, delay and capacity of signalized intersections, freeway controls, traffic system management and optimization, queues, traffic assignment and simulation.
Prerequisites: graduate standing and CIV ENG 592(C).
Last Taught: Fall 2025, Spring 2021, Spring 2018, Spring 2017.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 796 Connected and Automated Transportation Systems
3 cr. Graduate.
Connected and automated vehicle (CAV) technologies, covering sensing, trajectory planning, and control, as well as connectivity, cybersecurity, and policy. Students gain hands-on experience integrating sensors, communication systems, and control modules in CAV applications and projects.
Prerequisites: graduate standing and CIV ENG 490(P).
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 801 Applied Elasticity
3 cr. Graduate.
Equations of elasticity in two and three dimensions; two dimensional problems in rectangular polar and curvilinear coordinates; torsion of noncircular shafts; bending of prismatic bars.
Prerequisites: graduate standing and CIV ENG 401(P) or consent of instructor.
Last Taught: Fall 2001, Fall 1999, Fall 1997, Fall 1995.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 804 Theory of Plasticity
3 cr. Graduate.
Yield conditions, stress strain relations; plastic potential, hardening theories, torsion, bending, thick walled spherical and cylindrical shells under internal pressure; plane strain of perfectly plastic material.
Prerequisites: graduate standing and CIV ENG 805(P).
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 880 Bioengineering Seminar
1 cr. Graduate.
Presentations by bioengineering affiliated faculty, invited speakers, and graduate students.
Prerequisites: graduate standing.
Course Rules: CIV ENG 880, COMPSCI 880, ELECENG 880, IND ENG 880, MATLENG 880, and MECHENG 880 are jointly offered and count as repeats of one another. May be repeated to 3 cr max.
Last Taught: Spring 2018, Fall 2015, Spring 2015, Fall 2014.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 888 Candidate for Degree
0 cr. Graduate.
Available for graduate students who must meet minimum credit load requirements.
Prerequisites: graduate standing.
Course Rules: Fee for 1 cr assessed; unit does not count towards credit load for Fin Aid. Repeatable. Satisfactory/Unsatisfactory only.
Last Taught: Spring 2022, Fall 2019, Spring 2019, Fall 2016.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 891 Advanced Topics in Civil Engineering:
1-3 cr. Graduate.
Topics vary. Study of advanced topics of theory and practice of structural engineering. Specific topic and any additional prerequisites will be announced in the schedule of classes each time the course is offered.
Prerequisites: graduate standing.
Course Rules: Retakeable with change in topic to max of 9 cr.
Last Taught: Fall 2023, Spring 2023, Spring 2022, Fall 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 921 Internship in Civil & Environmental Engineering
3 cr. Graduate.
Immersive learning experience within a professional engineering environment. Through supervised work placements, students will have the opportunity to apply theoretical knowledge gained in the classroom to real-world engineering projects.
Prerequisites: completion of at least 6 graduate-level credits in CIV ENG; department consent required.
Course Rules: Retakeable to 6 credits max. Non-thesis students only.
Last Taught: Fall 2025, Spring 2025, Fall 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 940 Topics in Transportation:
1-3 cr. Graduate.
Topics vary. Topics and problems of current interest in transportation; readings and review of recent literature and development of a critical analysis or paper. Subject matter may be student initiated.
Prerequisites: graduate standing.
Course Rules: Retakeable with change in topic to max of 9 cr. Specific topic and any additional prerequisites will be announced in the schedule of classes each time the course is offered.
Last Taught: Fall 2019, Spring 2012, Spring 2005, Spring 2000.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 990 Masters Thesis
1-9 cr. Graduate.
Prerequisites: graduate standing and consent of instructor.
Course Rules: Repeatable to 18 cr max. Satisfactory/Unsatisfactory only.
Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 998 Doctoral Thesis
1-12 cr. Graduate.
Prerequisites: graduate standing and consent of instructor and graduate program committee.
Course Rules: Satisfactory/Unsatisfactory only. Repeatable.
Last Taught: Fall 2025, Summer 2025, Spring 2025, Fall 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

CIV ENG 999 Advanced Independent Study
1-3 cr. Graduate.
Prerequisites: graduate standing, consent of instructor and graduate program committee.
Course Rules: Repeatable to 9 cr max.
Last Taught: Fall 2025, Spring 2025, Fall 2024, Summer 2024.
Current Offerings: https://catalog.uwm.edu/course-search/