Department of Civil Engineering
California State University, Chico

Course List

CIVL ###	Old Number	Course Title	Prerequisites	Description	Units	Frequency
110	ME 025	Graphics for Civil Engineers	High school trigonometry and algebra.	An introduction to civil engineering graphical communication using both free-hand sketching and computer-aided drafting, including graphical solutions to three-dimensional geometry problems (descriptive geometry) as well as engineering data management.	2.0	Fa/Spr
130	010	Surveying	MATH 120 (may be taken concurrently).	Theory and practice in measurement and computation of distances, angles, and areas on the earth's surface. Error of combined measurements analysis. Use of scientific calculator required.	3.0	Fall
131	011	Introduction to Civil Engineering Design	CIVL 130.	Provides an introduction to civil engineering facilities and systems (environmental, structural, transportation and water resources), environmental impacts of those systems, historical development of design, introduction to design concepts and procedures, examples of the design of civil engineering systems, creativity in design, and applications in civil engineering design-horizontal curves, vertical curves, earthwork, state plane coordinates, geographic information systems and global positioning systems.	3.0	Spring
205	020	Computer Applications in Engineering	PHYS 204A (may be taken concurrently).	Use of the computer in a variety of applications from the fields of engineering. Topics include computer hardware, operating systems, the Internet, technical word processing, electronic spreadsheets, computer charting and drawing, computer programming, and ethics.	2.0	Fa/Spr
211	035	Statics	CIVL 110 or MECH 100 (may be taken concurrently); MATH 121; PHYS 204A.	Force systems, moments, equilibrium, centroids, and moments of inertia.	3.0	Fa/Spr
302	121	Engineering Economy and Statistics	MATH 121, junior standing.	Analysis of alternatives by basic engineering economic methods and applications of statistics including probability, sampling theory and data analysis, and tests of hypotheses.	3.0	Fa/Spr
311	101	Strength of Materials	CIVL 211; CIVL 110 or MECH 100; MATH 260 and MECH 210 (may be taken concurrently).	Strength and elastic properties of materials of construction; tension, compression, shear, and torsion stresses; deflection and deformation; stress analysis of beams and columns.	4.0	Fa/Spr
312	102	Structural Testing Laboratory	CIVL 205, CIVL 311.	Methods and instruments used in the determination of the strength and elastic properties of materials of engineering. Experiments verifying the theoretical principles of CIVL 311.	2.0	Fa/Spr
313	153	Structural Mechanics	CIVL 205 (may be taken concurrently), CIVL 311.	Fundamentals of structural analysis for beams, trusses, and frames. Topics include loading (including seismic), influence lines, approximate analysis methods, deflection analysis, and statically indeterminate structures. Methods applicable to computer analysis are introduced.	4.0	Fa/Spr
321	150	Fluid Mechanics	CIVL 211. Recommended: MATH 260, MECH 320 (may be taken concurrently).	Hydrostatics, principles of continuity, work-energy and momentum, viscous effects, dimensional analysis and similitude, flow in closed conduits, drag on objects.	4.0	Fa/Spr
402	119	Contracts, Specifications, and Technical Reports	ENGL 130 (or its equivalent) with a grade of C- or higher, junior standing.	Introduction to law as it relates to the practice of civil engineering. Operation of a successful civil engineering business. Writing various technical reports and specifications. This is a writing proficiency, WP, course; a grade of C- or better certifies writing proficiency for majors.	4.0	Fa/Spr
411	250	Soil Mechanics and Foundations	CIVL 312 and CIVL 321 (may be taken concurrently); ENGL 130 or equivalent.	Soil properties, tests, and classification. Analysis of soil stresses, consolidation, shear strength, lateral pressures, and ground water movement. Related design consideration involving spread footings, piles, retaining walls, and slopes. Use of programmable scientific calculator required.	4.0	Spring

415	255	Reinforced Concrete Design	CIVL 312, CIVL 313. Recommended: CIVL 411.	The analysis and design of reinforced concrete structures and elements by the strength design method. Laboratory includes experiments on concrete, concrete structural elements, and a design project.	4.0	Fall
431	288	Environmental Engineering	CHEM 111, CIVL 321; BIOL 101 or BIOL 108.	Introduction to water quality, water supply, distribution, and drinking water treatment; wastewater collection, treatment, and disposal. Disease transmission; water quality parameters; physical, chemical, and biological processes in the treatment of water, wastewater, and biosolids.	4.0	Spring
441	270	Transportation Engineering	CIVL 131; CIVL 302 (may be taken concurrently); CIVL 312, CIVL 411.	Transportation systems and facility planning, design, construction, operations, and maintenance. Pavement design and traffic engineering fundamentals. Laboratory includes field studies, design exercises, and modeling/forecasting tasks.	4.0	Fall
495	ENGR 195	Lifelong Development for Engineers	ENGL 130 or equivalent; senior standing.	Professional practices in engineering: ethics, opportunities for continuing development, design practices, proper use of computer software, professional relationships. A substantial written project will be required.	3.0	Fa/Spr
550	220	Advanced Surveying	CIVL 131 or faculty permission.	Laws, practices, and historical background on land surveying. Includes property surveys and legal descriptions. Use of personal computers required.	3.0	Inquire
551	251	Foundations Engineering	CIVL 411. Recommended: CIVL 415.	The application of soil mechanics principles to the design of foundations for buildings and earth structures. Integration of structural design and soil response.	3.0	Inquire
553	290	Advanced Structural Analysis	CIVL 313.	Analysis of statically determinate and indeterminate structures under the action of external effects, including gravity and lateral loading. Emphasis on computer analysis of trusses, continuous beams, and rigid frames, using both flexibility and stiffness approaches. Introduction to the finite element method for structural mechanics applications.	3.0	Inquire
554	254	Steel Design	CIVL 313.	Theory, analysis, and design of steel structural elements and systems using the Load and Resistance Factor Design (LRFD) method.	3.0	Inquire
556	256	Timber Design	CIVL 313.	Theory and design procedures for timber structures and their connections to resist gravity and lateral loads. Basic element design by the Allowable Stress Design (ASD) and/or Load and Resistance Factor Design (LRFD) methods are detailed. Also covered is design of floor and roof systems and shear walls. One or two 3-hour field trips required.	3.0	Inquire
557	257	Prestressed Concrete and Reinforced Masonry Design	CIVL 313. Recommended: CIVL 415.	Theory, analysis, design, and construction of prestressed concrete, precast concrete, and masonry structural elements and systems using working stress and/or ultimate strength design methods.	3.0	Inquire
558	258	Earthquake and Wind Engineering	CIVL 313, MATH 260. Recommended: Concurrent enrollment in or prior completion of CIVL 415, CIVL 554, CIVL 556, or CIVL 557.	Earthquake and wind hazard related to the structural design of buildings. Topics include engineering seismology, wind environment and climatology, structural dynamics, structural loading, and design methodologies. Use of computer software for the static and dynamic analysis of three-dimensional building systems.	3.0	Inquire
561	286	Open Channel Hydraulics	CIVL 205, CIVL 321.	Principles and applications of steady, gradually varying, and unsteady open channel hydraulics.	3.0	Inquire
562	252	Engineering Hydrology	CIVL 321 or faculty permission.	A concise treatment of modern hydrology, emphasizing a quantitative approach to surface-water runoff, ground-water runoff, precipitation, evapotranspiration, climate, infiltration, drainage-basin characteristics.	3.0	Inquire

567	287	Pipeline Hydraulics and Design	CIVL 302, CIVL 321; CIVL 411 (may be taken concurrently).	Design of pumped pipelines, analysis of transients in pipe systems caused by valve movement, pump power failure, etc. Design of transient controls through operational procedures and devices such as surge relief valves, air chambers, and surge tanks.	3.0	Inquire
571	291	Natural Systems for Wastewater Treatment	CIVL 431 or faculty permission.	Natural systems for the treatment of wastewater; transmission of excreta-related infections; treatment systems for removal of pathogens; wastewater and biosolids reuse in agriculture and aquaculture. Special emphasis on the problems of developing countries.	3.0	Inquire
573	293	Water Quality Engineering	CIVL 431 or faculty permission.	Water quality criteria and standards; engineering design; management and monitoring of water quality.	3.0	Inquire
575	295	Solid and Hazardous Waste Management	CIVL 431 or faculty permission.	An introduction to the handling and management of solid and hazardous wastes. Emphasis on state-of-the-art engineering techniques and contemporary management issues based on social, economic, and legal considerations; risk assessment; case studies. Special emphasis on problems of developing countries.	3.0	Inquire
581	271	Transportation Pavements	CIVL 441 or faculty permission.	Characteristics and manufacture of bituminous materials; engineering properties, design, and production of bituminous mixtures; analysis, design, and construction of flexible and rigid pavement cross-sections; stabilization of sub-grades; analysis of pavement distress; development and operation of pavement management systems; and application of computer software.	3.0	Inquire
583	273	Urban Transportation Systems Planning	CIVL 441 or faculty permission.	Introduction to systems approach, urban transportation technology, urban problems and transportation, forecasting methods, urban transportation models and calibration, traffic impact studies and USDOT planning requirements.	3.0	Inquire
585	275	Traffic Engineering	CIVL 441 or faculty permission.	Traffic engineering fundamentals, traffic control signs, markings, and signals. Intersection and highway capacity. Highway safety and accident investigations. Design of streets and parking facilities. Assessment of the environmental impact of traffic.	3.0	Inquire
591	231	Construction Management I	CIVL 205, junior standing. Recommended: CIVL 302.	Introduction to construction engineering and management. Cost estimation for contract construction and engineering, including labor, material, equipment, and overhead costs. Planning, scheduling, and progress control of construction operations. One or two 3-hour field trips required.	3.0	Inquire
592	232	Construction Management II	CIVL 205; CIVL 321 (may be taken concurrently). Recommended: CIVL 302.	Construction procedures, equipment and methods; efficient use of excavation and hauling equipment operations. Application of crew balance, process chart and operations research techniques to construction operations. Quality control and inspection technique for construction safety. One or two 3-hour field trips required.	3.0	Inquire