MAJOR IN CIVIL ENGINEERING

Requirements
Effective Fall 2023

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CIVE 102	Introduction to Civil and Environmental Engr		3
CIVE 103	Engineering Graphics and Computing		3
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)		1C	3
	Total Credits		**30**

Sophomore

CHEM 113	General Chemistry II		3
CIVE 202	Numerical Modeling and Optimization		3
CIVE 203	Engineering Systems and Decision Analysis		3
CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		3
CIVE 360	Mechanics of Solids		3
MATH 261	Calculus for Physical Scientists III		4
MECH 237	Introduction to Thermal Sciences		3
Science Technical Elective (see list below)			3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
Social and Behavioral Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		3C	3
	Total Credits		**34**

Junior

CIVE 300	Fluid Mechanics		3
CIVE 301	Fluid Mechanics Laboratory		1
CIVE 302	Evaluation of Civil Engineering Materials		3
CIVE 303	Infrastructure and Transportation Systems		3
CIVE 322	Basic Hydrology		3
CIVE 355	Introduction to Geotechnical Engineering		3
CIVE 356	Geotechnical Engineering Laboratory		1
CIVE 367	Structural Analysis		3
CIVE 467	Design of Reinforced Concrete Structures		3
MATH 340	Intro to Ordinary Differential Equations		4
Advanced Writing (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)		2	3

Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	3
	Total Credits		**33**
Senior			
CIVE 401	Hydraulic Engineering		3
CIVE 402	Senior Design Principles	4A,4B	3
CIVE 403	Senior Project Design	4C	3
CIVE 438	Fundamentals of Environmental Engr		3
CIVE 466	Design and Behavior of Steel Structures		3
Civil Engineering Technical Electives (see list below)			15
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	3
	Total Credits		**33**
	Program Total Credits:		**130**

Science Technical Electives – Select a minimum of 3 credits

Code	Title	Credits
BSPM 102	Insects, Science, and Society (GT-SC2)	3
BZ 110	Principles of Animal Biology (GT-SC2)	3
BZ 120	Principles of Plant Biology (GT-SC1)	4
ESS 210/GR 210	Physical Geography	3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	3
GEOL 150	Physical Geology for Scientists and Engineers	4
HORT 171/SOCR 171	Environmental Issues in Agriculture (GT-SS3)	3
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3
LIFE 102	Attributes of Living Systems (GT-SC1)	4
MIP 149	The Microbial World	3
NR 120A	Environmental Conservation (GT-SC2)	3
NR 130	Global Environmental Systems (GT-SC2)	3
NR 150	Oceanography (GT-SC2)	3
SOCR 240	Introductory Soil Science	4

Civil Engineering Technical Electives – Select a minimum of 15 credits

Select a minimum of 9 credits from the Engineering Technical Electives; a maximum of 6 credits may be selected from the Additional Technical Electives. Only 3 credits of a 4- or 5-credit course will apply toward this requirement.

Code	Title	Credits
Engineering Technical Electives – Select 9-15 credits from the following:		
CIVE 305	Intermediate AutoCAD	3
CIVE 330	Ecological Engineering	3
CIVE 405	Sustainable Civil/Environmental Engineering	3
CIVE 413	Environmental River Mechanics	3
CIVE 423	Groundwater Engineering	3
CIVE 437	Wastewater Treatment Facility Design	3
CIVE 439	Applications of Environmental Engr Concepts	3
CIVE 440	Nonpoint Source Pollution	3
CIVE 442	Air Quality Engineering	3
CIVE 455	Applications in Geotechnical Engineering	3
CIVE 458	Environmental Geotechnics	3
CIVE 502	Fluid Mechanics	3
CIVE 505	Structural Inspection, Management and Repair	3
CIVE 507	Transportation Engineering	3
CIVE 508	Bridge Engineering	3
CIVE 510	Applied Hydraulic System Design	3
CIVE 511	Coastal Engineering	3
CIVE 512	Irrigation Systems Design	3
CIVE 513	Morphodynamic Modeling	3
CIVE 514	Hydraulic Structures/Systems	3
CIVE 519	Irrigation Water Management	3
CIVE 520	Physical Hydrology	3
CIVE 521	Hydrometry	3
CIVE 524/WR 524	Modeling Watershed Hydrology	3
CIVE 525	Water Engineering International Development	3
CIVE 529	Environmental Organic Chemistry	3
CIVE 530	Environ Engr at the Water-Energy-Health Nexus	3
CIVE 531	Groundwater Hydrology	3
CIVE 533/BIOM 533	Biomolecular Tools for Engineers	3
CIVE 538	Aqueous Chemistry	3
CIVE 540/CBE 540	Advanced Biological Wastewater Processing	3
CIVE 541	Physical Chemical Water Treatment Processes	3
CIVE 542	Water Quality Modeling	3
CIVE 544	Water Resources Planning and Management	3
CIVE 547/STAT 547	Statistics for Environmental Monitoring	3
CIVE 549	Drainage and Wetland Engineering	3

CIVE 550	Foundation and Retaining Wall Engineering	3
CIVE 555	Mining Geotechnics	3
CIVE 556	Slope Stability, Seepage, and Earth Dams	3
CIVE 558	Containment Systems for Waste Disposal	3
CIVE 559	Special Topics in Geotechnical Engineering	3
CIVE 560	Advanced Mechanics of Materials	3
CIVE 561	Advanced Steel Behavior and Design	3
CIVE 562	Fundamentals of Vibrations	3
CIVE 565	Finite Element Method	3
CIVE 566	Intermediate Structural Analysis	3
CIVE 567	Advanced Concrete Design	3
CIVE 568	Design of Masonry and Wood Structures	3
CIVE 571	Pipeline Engineering and Hydraulics	3
CIVE 572	Analysis of Urban Water Systems	3
CIVE 573	Urban Stormwater Management	3
CIVE 574	Civil Engineering Project Management	3
CIVE 575	Sustainable Water and Waste Management	3
CIVE 576	Engineering Applications of GIS and GPS	3
CIVE 578	Infrastructure and Utility Management	3
ENGR 550/ MATH 550	Numerical Methods in Science and Engineering	3
Additional Technical Electives – Select 0-6 credits from the following:		
BC 351	Principles of Biochemistry	4
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 341	Modern Organic Chemistry I	3
CON 370	Asphalt Pavement Materials and Construction [1]	3
ERHS 446	Environmental Toxicology	3
GEOL 442	Applied Geophysics	4
GR 323/NR 323	Remote Sensing and Image Interpretation	3
LIFE 320	Ecology	3
MATH 332	Partial Differential Equations	3
MATH 369	Linear Algebra I	3
MIP 300	General Microbiology	3
NR 319	Introduction to Geospatial Science	4
A maximum of one course may be selected from the following:		
FIN 305	Fundamentals of Finance [1]	3
MGT 305	Fundamentals of Management [1]	3
MKT 305	Fundamentals of Marketing [1]	3

[1] Students may need to obtain an override or approval from the respective department to take this course.