

# CE Engineering Topics Electives

## 2012-13 Catalog

**Students in the General track must take eight (8) credits of engineering topics and three (3) credits of design electives. Of this total of eleven (11) credits, six (6) must be CCEE courses.** *The student is responsible for making sure the appropriate prerequisites have been met for any course (s) attempted. Please see the catalog for details.*

Students with a particular interest in a technical specialty area are encouraged to confer with a professor in that area about taking a 500-level (graduate) course to expand their technical horizon and better prepare them to enter the practice of Civil Engineering.

Course	CR.	Title
A B E 363	4	Agri-Industrial Applications of Electric Power & Electronics
A B E 388 (C E/E E/M E/MAT E)	3	Sustainable Engineering & International Development
A B E 408 (EN SCI)	3	GIS and Natural Resources Management
A B E 466 (AER E/CPR E/E E/ ENGR/I E/MAT E/M E)	3	Multidisciplinary Engineering Design
A B E 478	3	Wood Frame Structural Design
ACCT 215	3	Legal Environment of Business
ACCT 284* or ↓	3	Financial Accounting
ACCT 285* ( <i>*Only one counts toward graduation</i> )	3	Managerial Accounting
AER E 261	4	Introduction to Performance and Design
AER E 355	3	Aircraft Flight Dynamics and Control
AER E 417 (E M)	3	Experimental Mechanics
AER E 466 (A E/CPR E/E E/ENGR/I E/MAT E/M E)	3	Multidisciplinary Engineering Design
AGRON 402 (EN SCI/ GEOL/MTEOR/NREM)	4	Watershed Hydrology
AGRON 404 (EN SCI/ENV S/MTEOR)	3	Global Change
AGRON 485 (ENSI/MICRO)	3	Soil and Environmental Microbiology
ASTRO 342* or ↓	3	Introduction to Solar System Astronomy
ASTRO 346* ( <i>*Only one counts toward graduation</i> )	3	Introduction to Astrophysics
ASTRO 405	3	Astrophysical Processes
BIOL 173^ (ENV S) or ↓	3	Environmental Biology
BIOL 211^ & BIOL 211L (^General option only)	3 & 1	Principles of Biology I and Lab (optional)
BIOL 381 (EN SCI/ENV S/MICRO)	3-4	Environmental Systems I: Introduction to Environmental Systems
C E 388 (A E/E E/M E/ MAT E)	3	Sustainable Engineering & International Development
C E 417	3	Land Surveying
C E 420 (General Option Only)	3	Environmental Engineering Chemistry
C E 421 (General Option Only)	3	Environmental Biotechnology
C E 428 (General Option Only)	3	Water and Wastewater Treatment Plant Design
C E 446	3	Bridge Design
C E 448	3	Building Design
C E 451	3	Urban Transportation Planning Models
C E 460	3	Foundations
C E 473	3	Groundwater Hydrology
C E 490	1-3	<i>Independent Study -- with a contract between the student and instructor at registration</i>
C E 500 - level courses	var.	(except CE 590, 591, 595 & 599)
CH E 210	3	Material and Energy Balances
CH E 406	3	Environmental Chemodynamics
CHEM 211 & 211L	2 & 2	Quantitative & Environmental Analysis and Lab
CHEM 231 & 231L (General Option Only)	3 & 1	Elementary Organic Chemistry and Lab

COM S 481 (MATH)	3	Numerical Solution to Diff. Equations and Interpolation
CON E 380	3	Engineering Law
CPR E 281	4	Digital Logic
CPR E 381	4	Computer Organization & Assembly Level Programming
CPR E 466 (AER E/A E/E E/ENGR/I E/MAT E/M E)	3	Multidisciplinary Engineering Design
CRP 293 (DSN S/ENV S)	3	Environmental Planning
CRP 376 (ECON)	3	Rural, Urban and Regional Economics
CRP 451	3	Introduction to Geographic Information Systems
CRP 484 (DSN S/ENV S)	3	Sustainable Communities
CRP 491 (DSN S/ENV S)	3	Environmental Law and Planning
DSN S 293 (CRP/ENV S)	3	Environmental Planning
DSN S 484 (CRP/ENV S)	3	Sustainable Communities
DSN S 491 (CRP/ENV S/L A)	3	Environmental Law and Planning
E E 201	4	Electric Circuits
E E 224	4	Signals and Systems I
E E 230	4	Electronic Circuits and Systems
E E 388 (A E/C E/MAT E)	3	Sustainable Engineering and International Development
E E 442	2	Introduction to Circuits and Instruments
E E 448	2	Introduction to AC Circuits and Motors
E E 466 (A E/AER E/CPR E/ENGR/I E/M E/MAT E)	3	Multidisciplinary Engineering Design
E M 350	3	Introduction to Nondestructive Evaluation Engineering
E M 362 & E M 362L (MAT E)	3 & 1	Principles of Non-Destructive Testing & Lab (optional)
E M 417 (AER E)	3	Experimental Mechanics
E M 424	3	Intermediate Mechanics of Materials
E M 425	3	Introduction to the Finite Element Method
E M 451 (M E)	3	Engineering Acoustics
E M 500 - level courses	var.	(except EM 590)
ECON 371	4	Introductory Econometrics
ECON 376 (CRP)	3	Rural, Urban and Regional Economics
ECON 380 (ENV S)	3	Environmental and Resource Economics
ECON 385	3	Economic Development
EN SCI 381(BIOL/ENV S/MICRO)	3-4	Environmental Systems I: Introduction to Environmental Systems
EN SCI 402 (AGRON/ GEOL/MTEOR/NREM)	4	Watershed Hydrology
EN SCI 402I (AGRON/IA LL)	4	Watershed Hydrology and Surficial Processes
EN SCI 404 (AGRON/ENV S/MTEOR)	3	Global Change
EN SCI 408 (A E)	3	GIS and Natural Resources Management
EN SCI 411 (GEOL)	4	Hydrogeology
EN SCI 414 (GEOL)	3	Applied Groundwater Flow Modeling
EN SCI 419 (GEOL)	3	Environmental Geochemistry
EN SCI 479 (GEOL)	3	Surficial Processes
ENGR 466 (A E/AER E/CPR E/E E/I E/M E/MAT E)	3	Multidisciplinary Engineering Design
ENV S 293 (CRP/DSN S)	3	Environmental Planning
ENV S 324 (GEOL/MTEOR)	3	Energy and the Environment
ENV S 380 (ECON)	3	Environmental and Resource Economics
ENV S 381 (BIOL/EN SCI/MICRO)	3-4	Environmental Systems I: Introduction to Environmental Systems
ENV S 404 (AGRON/EN SCI/MTEOR)	3	Global Change
ENV S 484 (CRP/DSN S)	3	Sustainable Communities
ENV S 491 (CRP/DSN S)	3	Environmental Law and Planning
GEOL 324 (ENV S/MTEOR)	3	Energy and the Environment
GEOL 356	5	Structural Geology
GEOL 365	3	Igneous and Metamorphic Petrology

GEOL 402 (AGRON/EN SCI/MTEOR/NREM)	4	Watershed Hydrology
GEOL 411 (EN SCI)	4	Hydrogeology
GEOL 414 (EN SCI)	3	Applied Groundwater Flow Modeling
GEOL 419 (EN SCI)	3	Environmental Geochemistry
GEOL 479 (EN SCI)	3	Surficial Processes
I E 312	3	Optimization
I E 341	3	Production Systems
I E 361 (STAT)	3	Statistical Quality Assurance
I E 408 (TSM)	3	Interdisciplinary Problem Solving
I E 409 (TSM)	3	Interdisciplinary Systems Effectiveness
I E 413	4	Stochastic Modeling, Analysis and Simulation
I E 466 (A E/AER E/CPR E/E E/ENGR/MAT E/M E)	3	Multidisciplinary Engineering Design
M E 231	3	Engineering Thermodynamics I
M E 332	3	Engineering Thermodynamics II
M E 436	4	Heat Transfer
M E 441	3	Fundamentals of Heating, Ventilating, & Air Conditioning
M E 451 (E M)	3	Engineering Acoustics
M E 466 (A E/AER E/CPR E/I E/E E/ENGR/MAT E)	3	Multidisciplinary Engineering Design
MAT E 362 & 362L (E M)	3 & 1	Principles of Nondestructive Testing & Lab (optional)
MAT E 273	2	Principles of Materials Science & Engineering
MAT E 466 (A E/AER E/CPR E/I E/E E/ENGR/I E/M E)	3	Multidisciplinary Engineering Design
Math 304	3	Introductory Combinatorics
Math 317 ( <i>also a Numeric Analysis elective</i> )	4	Theory of Linear Algebra
Math 365	3	Complex Variables with Applications
Math 373 ( <i>also a Numeric Analysis elective</i> )	3	Introduction to Scientific Computation
Math 385	3	Introduction to Partial Differential Equations
Math 481 (COM S)	3	Numerical Solution to Diff. Equations and Interpolation
MICRO 201L	1	Introductory Microbiology Laboratory
MICRO 381 (BIOL/EN SCI/ENV S)	3-4	Environmental Systems I: Introduction to Environmental Systems
MICRO201	2	Introduction to Microbiology
MTEOR 206 (AGRON)	3	Introduction to Meteorology
MTEOR 301* ( <i>or MTEOR 341</i> )	4	General Meteorology
MTEOR 324 (ENV S/GEOL)	3	Energy and the Environment
MTEOR 341* ( <b><i>*Only one counts toward graduation</i></b> )	3	Atmospheric Physics I
MTEOR 402 (ARON/EN SCI/GEOL/NERM)		Watershed Hydrology
MTEOR 404 (AGRON/EN SCI/ENV S)	3	Global Change
NREM 402 (AGRON/EN SCI/GEOL/MTEOR)	4	Watershed Hydrology
NUC E 401	3	Nuclear Radiation Theory and Engineering
PHYS 321	3	Introduction to Modern Physics I
PHYS 321L	1	Introductory Laboratory in Modern Physics I
PHYS 322	3	Introduction to Modern Physics II
PHYS 322L	1	Introductory Laboratory in Modern Physics II
PHYS 361	3	Classical Mechanics
PHYS 362	3	Intermediate Mechanics
SCM 301	3	Supply Chain Management
SCM 460	3	Decision Tools for Logistics & Operations Management
SCM 461	3	Principles of Transportation
SCM 462	3	Transportation Carrier Management
SCM 466	3	International Transportation and Logistics
STAT 361 (I E)	3	Statistical Quality Assurance
STAT xxx	var.	Any statistics course above or including Stat 401 except STAT 490