

North Carolina State University
CIVIL ENGINEERING CURRICULUM

Degree Earned: B.S. in Civil Engineering: Department of Civil, Construction, and Environmental Engineering
 For Students entering After January 2013 (S '13)

| FRESHMAN YEAR | | | | | |
|----------------------------------------------------------|-------------------------------------------|------------------|----------------------------------------|------------------------------------------|------------------|
| FALL SEMESTER | | CREDITS | SPRING SEMESTER | | CREDITS |
| CH 101 | Chemistry, A Molecular Sci. | 3 | CSC 111 | Intro to Computing: Python | 3 |
| CH 102 | General Chemistry Lab | 1 | EC 205 | Economics (GEP Soc Sci Req*) | 3 |
| E 101 | Introduction to Engr & Prob Solv | 1 | MA 241 | Calculus II | 4 |
| E 115 | Intro to Computing Environ | 1 | PY 205 | Physics for Engineers & Scientists I | 3 |
| ENG 101 | Academic Writing and Research | 4 | PY 206 | Physics for Engineers & Scientists I Lab | 1 |
| MA 141 | Calculus I | 4 | HES *** | Phys. Ed/Healthy Living Course* | 1 |
| HESF 1XX | Fitness & Wellness Course* | 1 | | | |
| | | <i>Total: 15</i> | | | <i>Total: 15</i> |
| SOPHOMORE YEAR | | | | | |
| FALL SEMESTER | | CREDITS | SPRING SEMESTER | | CREDITS |
| CE 214 | Engineering Mechanics – Statics | 3 (CP)* | CE 313 | Mechanics of Solids | 3 (CP)* |
| TDE 220 | Civil Engineering Graphics | 3 | CE 382 | Hydraulics | 3 (CP)* |
| MA 242 | Calculus III | 4 | MA 341 | Applied Differential Eq OR | |
| PY 208 | Physics for Engineers & Scientists II | 3 | MA 305 | Elem Linear Algebra | 3 |
| PY 209 | Physics for Engineers & Scientists II Lab | 1 | MSE 200 | Mech Prop of Struct Mat | 3 |
| GEP Requirement* | | 3 | GEP Requirement* | | 3 |
| | | <i>Total: 17</i> | | | <i>Total: 15</i> |
| JUNIOR YEAR | | | | | |
| FALL SEMESTER | | CREDITS | SPRING SEMESTER | | CREDITS |
| CE Area Intro Elective I ¹ | | 3 | CE Area Intro Elective IV ¹ | | 3 |
| CE Area Intro Elective II ¹ | | 3 | CE Area Intro Elective V ¹ | | 3-4 |
| CE Area Intro Elective III ¹ | | 3 | CE Elective I ² | | 3 |
| CE 390 | Engineering Economics | 1 | Basic Science Elective ³ | | 3 |
| ST 370 | Prob & Stat for Engineers | 3 | CE Lab, if needed (CE 324 or CE 381) | | 1-0 |
| GEP Requirement* | | 3 | GEP Requirement* | | 3 |
| | | <i>Total: 16</i> | | | <i>Total: 16</i> |
| SENIOR YEAR | | | | | |
| FALL SEMESTER | | CREDITS | SPRING SEMESTER | | CREDITS |
| CE Elective II ² | | 3 | CE Elective V ² | | 3 |
| CE Elective III ² | | 3 | CE Elective VI ² | | 3 |
| CE Elective IV ² | | 3 | CE Elective VII ² | | 3 |
| CE/MA/SCI Elective ⁴ | | 3 | GEP Requirement* | | 3 |
| COM 110 | Public Speaking OR | | GEP Requirement* | | 2 |
| ENG 331 | Comm for Engr & Tech | 3 | | | |
| MAE 201 | Thermodynamics OR | | | | |
| ECE 331 | Princ. Of Electrical Eng. I | 3 | | | |
| | | <i>Total: 18</i> | | | <i>Total: 14</i> |
| Minimum Credit Hours Required for Graduation: 126 | | | | | |

Major/Program Footnotes:

GEP REQUIREMENTS to be selected from the applicable GEP list in consultation with advisor.

¹CE Area Intro Electives; ²CE Electives; ³Basic Science Elective; ⁴CE/MA/SCI Elective: select from lists on worksheet in consultation with advisor.

Foreign Language proficiency at the FL_102 level required for graduation.

*Critical Path Course

Pick at least one CE AREA Introductory course (I) in 5 different areas.
 Pick an additional 7 courses; at least 1 must be a: Capstone (C); another must be a design (D) in an area different from that of the capstone. Pick at least 3 CE laboratory experiences (L).

CIVIL ENGINEERING CURRICULUM
COURSE LISTING WITH PRE- AND COREQUISITES IN PARENTHESES
 For students entering after January 2013 (S '13)

| | | | | Hrs | Sem | Pre- & Co- requisites |
|--------------------------------------------------|---|--------|----------------------------------|-----|-------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Coastal Engineering & Water Resources | | | | | | |
| | L | CE 381 | Hydraulic Sys. Meas. Lab | 1 | F/S | CoReq: CE 382 |
| I | D | CE 383 | Hydrology & Urban Water Sys | 3 | F/S | C- or better in CE 382 |
| I | | CE 487 | Intro. To Coastal & Ocean Engr | 3 | S | CE 382; Senior standing |
| | D | CE 488 | Water Resources Engineering | 3 | F | CE 339; CoReq: CE 383 |
| Computing and Systems | | | | | | |
| I | | CE 437 | Civil Engineering Computing | 3 | F | CSC 111 & (MA 341 or MA 305) |
| I | | CE 339 | Civil Engineering Systems | 3 | S | CSC 111 & (MA 341 or MA 305) |
| Construction Engineering | | | | | | |
| I | D | CE 367 | Mech. & Elec. Sys in Buildings | 3 | S | CE 382 |
| | D | CE 466 | Building Construction Engr | 3 | F | CoReq: CE 327 (Priority to CON) |
| Environmental Engineering | | | | | | |
| I | | CE 373 | Fund of Environmental Engr | 3 | F/S | CoReq: CHE 205 or CE 382 |
| | | CE 479 | Air Quality | 3 | S | CE 373, CE 382; CoReq: ST 370 |
| | D | CE 476 | Air Pollution Control | 3 | F | CE 373, CE 390, MAE 201; CoReq: ST 370 |
| | D | CE 477 | Principles of Solid Waste Engr | 3 | S | CE 373, CE 382, CE390; CoReq: CE 342 |
| | D | CE 484 | Water Supply & Waste Water | 3 | F | CE 373, CE 382 |
| | | CE 478 | Energy and Climate | 3 | F | CoReq: CE 390 |
| Geotechnical Engineering | | | | | | |
| I | L | CE 342 | Engr Behav of Soils & Found | 4 | F/S | C- or better in CE 313; CoReq: CE 382 |
| | | CE 435 | Engineering Geology | 3 | alt S | MEA 101; Junior standing |
| | D | CE 443 | Seepage, Embank, & Retain Str. | 3 | alt S | C- or better in CE 342; CoReq: CE 390 |
| | D | CE 444 | Intro to Foundation Engr | 3 | alt F | C- or better in CE 342 (first offered Fall 2016) |
| Structural Engineering | | | | | | |
| | L | CE 324 | Structural Behavior Meas. | 1 | F/S | C- or better in CE 313 |
| I | D | CE 327 | Reinforced Concrete Design | 3 | F/S | C- or better in CE 313 |
| | | CE 325 | Structural Analysis | 3 | F/S | CSC 111, C- or better in CE 313 |
| I | D | CE 426 | Structural Steel Design | 3 | F/S | C- or better in CE 313 |
| C | D | CE 420 | Structural Engr Project | 3 | F/S | C- or better in CE 325, CE 327, CE 342, CE 426; CoReq: CE 390 |
| Transportation Engineering | | | | | | |
| I | D | CE 305 | Traffic Engineering | 3 | F/S | CE or CON Majors; CoReq: ST 370 |
| | | CE 401 | Transportation Systems Engr | 3 | F | C- or better in CE 305 |
| | D | CE 402 | Traffic Operations | 3 | F | C- or better in CE 305 |
| | D | CE 403 | Highway Design | 3 | S | C- or better in CE 305 |
| | D | CE 413 | Principles of Pavement Design | 3 | F | CE 332; CoReq: CE 342 |
| Other Civil Engineering Courses | | | | | | |
| I | L | CE 332 | Materials of Construction | 3 | F/S | MSE 200; Junior standing in CE or CON |
| | L | CE 301 | Civil Engr Surveying & Geomatics | 3 | F/S | CE, CON or ENE majors |
| C | D | CE 450 | Civil Engr Project | 3 | F/S | CE 390 & one course from two of the following categories: Geotech (CE435,CE443,CE444), Trans (CE401,CE402,CE403) or Water Resources (CE484, CE488) |

Fall Semester

CH 101 (Co: CH 102)
 CH 102 (Co: CH 101)
 E 101
 E 115
 ENG 101
 MA 141
 HESF 1XX Fitness & Wellness Course*

CODA Requirements: C or Better in CH 101, CH 102, E 101, MA 141, MA 241, PY 205, PY 206
 Satisfactory (S) in E 115

Spring Semester

FRESHMAN YEAR

CSC 111 (Co: E 115 and MA 141)
 EC 205 (GEP Requirement)*
 MA 241 (C- or better in MA 141)
 PY 205 (C- or better in MA 141)
 PY 206 (C- or better in MA 141; Co: PY 205)
 HES XXX Phys. Ed//Healthy Living Course*

SOPHOMORE YEAR

CE 214 (GPA≥2.5, C or better in PY 205 & MA 241, Co: MA 242) CE 313 (MA 242, C- or better in CE 214)
 TDE 220 (Graphics Elective) CE 382 (C- or better in CE 214; Co: MA 341 or 305 or ST 370)
 MA 242 (C- or better in MA 241) MA 341 (MA 242) or
 PY 208 (C- or better in PY 205 and MA 241) MA 305 (MA 241) (recommended for structures)
 PY 209 (C- or better in PY 205, 206, and MA 241; Co: PY 208) MSE 200 (C or better in CH 101)
 GEP Requirement* GEP Requirement*

JUNIOR YEAR

(All CE courses listed below also require Junior Standing in CE, CON, or ENE)

CE Area Intro Elective I¹ CE Area Intro Elective IV¹
 CE Area Intro Elective II¹ CE Area Intro Elective V¹
 CE Area Intro Elective III¹ CE Elective I²
 CE 390 (CSC 111 and MA 341 or MA 305 or ST 370) Basic Science Elective³
 ST 370 (MA 241) CE Lab if needed (CE 324 or CE 381)
 GEP Requirement* GEP Requirement*

SENIOR YEAR

CE Elective II² CE Elective V²
 CE Elective III² CE Elective VI²
 CE Elective IV² CE Elective VII²
 CE/MA/SCI Elective⁴ GEP Requirement*
 COM 110 or GEP Requirement*
 ENG 331 (Junior standing)
 MAE 201 (MA 242, PY 208) or
 ECE 331 (MA 241, PY 208)

Major/Program Footnotes:

¹GEP Requirements to be selected from the applicable GEP list in consultation with advisor
²CE Area Intro Elec.; ³CE Elec.; ⁴Basic Science Elec.; CE/MA/SCI: select from lists on worksheet in consultation with advisor
 Foreign Language proficiency at the FL_102 level required for graduation