



Civil, Environmental, and Construction Engineering

ACTIVE TEACHING DISCIPLINES		
For Administrative Use Only – Please do <u>not</u> edit federal NCES information below		
CIP Code	Description	NCES Definition For more information on the NCES CIP taxonomy, see http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55
14.0101	Engineering, General	A program that generally prepares individuals to apply mathematical and scientific principles to solve a wide variety of practical problems in industry, social organization, public works, and commerce. Includes instruction in undifferentiated and individualized programs in engineering.
14.0801	Civil Engineering, General	A program that generally prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of structural, load-bearing, material moving, transportation, water resource, and material control systems; and environmental safety measures.
14.1401	Environmental/Environmental Health Engineering	A program that prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of systems for controlling contained living environments and for monitoring and controlling factors in the external natural environment, including pollution control, waste and hazardous material disposal, health and safety protection, conservation, life support, and requirements for protection of special materials and related work environments.
14.3301	Construction Engineering	A program that prepares individuals to apply scientific, mathematical, and management principles to the planning, design, and building of facilities and structures. Includes instruction in civil engineering, structural principles, site analysis, computer assisted design, geology, evaluation and testing, materials, contracting, project management, graphic communications, and applicable laws and regulations.

Note: Information on CIP codes was obtained from IPEDS. Construction Engineering CIP Code changed in 2010 from 14.0803 to 14.3301.

The qualifications described below represent commonly accepted good practices for teaching in the discipline(s) included in this unit. [1]

Please provide a general description of unit, including programs and course offerings [2]

The Department of Civil, Environmental, and Construction Engineering (CECE) offers these programs:

- Civil Engineering, B.S.
- Civil Engineering, M.S.C.E.
- Civil Engineering, M.S. (tracks: Structural and Geotechnical, Transportation, Water Resources)
- Civil Engineering, Graduate Certificate Programs (Construction Engineering, Structural Engineering, Transportation Engineering)
- Civil Engineering, Ph.D.
- Environmental Engineering, B.S.
- Environmental Engineering, M.S.Env.E
- Environmental Engineering, M.S. Environmental Engineering Sciences
- Environmental Engineering, Graduate Certificate Program (Wastewater Treatment)
- Environmental Engineering, Ph.D.
- Construction Engineering, B.S.

Education and research in civil engineering reflects the very broad nature of the field, which encompasses the design, construction, operation, and enhancement of the infrastructure of society. The educational program includes coursework in structural analysis and design, geotechnical engineering and foundations, transportation planning and operations, traffic engineering, water resources engineering, and construction engineering. The B.S. Civil Engineering program is accredited by the Accreditation Board for Engineering and Technology (ABET). Several specialty tracks are offered in the Civil Engineering M.S. program: Structural and Geotechnical Engineering, Transportation Systems Engineering, and Water Resources Engineering. Graduates who are awarded the Civil Engineering M.S. degree study a specialty and are employable in that specialty (Structures/Geotechnical, Transportation or Water Resources). However, graduates who are awarded the Civil Engineering M.S.C.E. are required to study a variety of areas (specialties) and are employable in more than one area (specialty). Geography courses are offered through the CECE Department as service courses to all majors on campus, since UCF does not offer a Geography degree. Likewise, Engineering Analysis-Statics is a service course offered through the CECE Department to all engineering majors.

The Environmental Engineering program focuses on pollution control, pollution prevention, and the correction of pollution effects on natural and man-made environments. The educational program includes coursework in drinking water treatment, wastewater treatment, solid and hazardous waste management, atmospheric pollution control and modeling, and stormwater modeling and management. The B.S. Environmental Engineering program is accredited by the Accreditation Board for Engineering and Technology (ABET). Graduates who are awarded the Environmental Engineering Sciences M.S. degree study that specialty and are employable in

that specialty. However, graduates who are awarded the Environmental Engineering M.S.Env.E. are required to study a variety of areas (specialties) and are employable in more than one area (specialty). The Environmental program is solidly keyed into the biological and physical science disciplines, which provides many opportunities for interdisciplinary research.

The Construction Engineering program is accredited by the Accreditation Board for Engineering and Technology (ABET). Upper level classes cover construction industry basics such as estimating, scheduling and project control principals, construction methods, construction equipment, mechanical and electrical systems for buildings, project management, accounting labor resource management, and organization behavior principles. The construction industry is the second largest industry in the United States employing more than six million people representing engineers, contractors, architects, owners, real estate developers, construction labor, material and equipment vendors, financial and insurance institutions, attorneys and government agencies. The program prepares students for rewarding careers in the areas listed above. The interdisciplinary nature of the program offers a mix of essential technical, managerial, and business courses for a successful career in the construction industry. Teaching Civil, Environmental, or Construction Engineering at the undergraduate level typically requires an M.S. or Ph.D. in Civil, Environmental, or Construction Engineering or one of the closely related disciplines noted below. Teaching Environmental or Civil Engineering at the graduate level requires a Ph.D. in Environmental or Civil Engineering or one of the closely related disciplines noted below.

Terminal degree(s) for each discipline taught in the unit [3]

A terminal degree in the teaching discipline qualifies a person to teach throughout the broad scope of the teaching discipline at the undergraduate and graduate levels. [4]

Ph.D., Civil Engineering
Ph.D., Environmental Engineering
Ph.D., Construction Engineering

Note: Civil Engineering faculty can teach Environmental or Construction Engineering courses and vice versa where course content overlaps between two or three of the degree disciplines.

Broadly related discipline(s) for each discipline taught in the department

Specialization qualifies a person to teach throughout the broad scope of teaching discipline (approximately five or more courses on distinct topics)

Related disciplines include specialty areas with significant Civil, Environmental, or Construction Engineering connection or strongly related to course content (especially interdisciplinary content):

- Transportation Engineering
- Structural Engineering
- Geotechnical Engineering
- Construction Engineering and Management
- Water Resources Engineering
- Hydraulics
- Sanitary Engineering
- Chemical Engineering
- Environmental Systems Engineering

Selectively related discipline(s) for each discipline taught in the department

Specialization does not qualify a person to teach distinct topics throughout the broad scope of the teaching discipline but does qualify to teach a more restrictive set of courses in the discipline (approximately four or fewer courses on distinct topics)

- Aerospace Engineering
- Mechanical Engineering
- Electrical Engineering
- Geography
- Geodetic Science
- Law (Juris Doctorate)

Justification for use of faculty with 'other' teaching qualifications and additional faculty teaching qualifications information [5] [6]

The CECE Department offers basic Geography service courses to all undergraduate majors on campus for which appropriate qualifications include an M.A. in Geography, an M.S.E. in Environmental Engineering, and an M.S. in Structural and Geotechnical Engineering.

Faculty with an M.S. or Ph.D. in Mechanical Engineering, Aerospace Engineering, Engineering Mechanics, and Engineering Science and Mechanics have a strong structural analysis background; it is appropriate for them to teach courses related to Structural Engineering or Mechanical Systems. Likewise, it is appropriate for faculty with an M.S. or Ph.D. in Electrical Engineering to teach courses related to Electrical Systems. The CECE Department offers a course in Mechanical and Electrical Systems for Buildings.

The CECE Department offers a course, C.E. Measurements, which includes surveying, GIS, GPS, and remote sensing, as part of the required coursework for the Civil and Construction Engineering programs and as an elective for the Environmental Engineering program requirements for which appropriate qualifications include an M.S. degree or higher in Geodetic Science and Surveying or an M.S. in Civil Engineering or a subspecialty thereof.

The CECE Department offers a graduate course focusing on Construction Engineering Contracts as part of the Civil Engineering Graduate Certificate Program in Construction Engineering. It is appropriate for individuals with a J.D. and who practice law in the Construction Engineering area to teach this course.

Certain practical, undergraduate courses are best taught by instructors with an M.S. degree in Civil, Environmental, or Construction Engineering or a related discipline. These instructors bring real-world experience to the students, thereby exposing students to an understanding of professional and ethical responsibility (ABET criterion f), the broad education necessary to understand the impact of engineering solutions in a global and societal context (ABET criterion h), and a knowledge of contemporary issues (ABET criterion j).

[1] The unit chair/director, in consultation with unit faculty, has responsibility for identifying and articulating commonly accepted good practices in each teaching discipline taught in the unit and for providing appropriate justification as needed. In the case of an emerging discipline for which common collegiate practice has not yet been established, a compelling case must be provided as necessary to substantiate the claims made.

[2] Please provide a general description of the unit course and program offerings at the undergraduate and graduate levels (e.g., degree and certificate programs, minors, departmental contribution to interdisciplinary core courses). This section may also be used to provide other pertinent information about the unit and the discipline(s) it represents (e.g., discipline accreditation, faculty research emphases).

[3] List those degrees for each discipline taught in the unit that are regarded by the respective disciplinary community as terminal degrees in the discipline and thus, qualify a faculty member to teach throughout the broad scope of that discipline at both the undergraduate and graduate levels. In most fields, a terminal degree is the commonly accepted highest degree in the given field of study. In such instances, the terminal degree is usually considered to be the academic (or research) doctorate (e.g., Doctor of Philosophy). However, some academic fields have, through custom, recognized terminal degrees that are not doctorates (e.g., Master of Fine Arts, Master of Social Work). Note that terminal degrees from other disciplines may be appropriate for teaching in the discipline as well, but such credentials should be listed as broadly or selectively related degrees, as appropriate.

[4] A non-terminal master's degree in the teaching discipline qualifies a person to teach throughout the broad scope of the teaching discipline at the undergraduate level, not at the graduate level.

[5] Please use this section to provide justification that helps to make the case for special circumstances that apply to your unit including the use of faculty qualified to teach by 'other' qualifications and other special situations. Typically the statements provided in this section should be of a general nature, and not address specific individuals. (Justification for specific individuals is typically handled separately during the teaching certification process.) As appropriate, please cite to appropriate authorities to justify departmental practices (e.g., discipline accreditation guidelines, state regulations).

[6] When a faculty member cannot be qualified to teach on the basis of academic credentials (degree(s) and course work) alone, qualifications other than academic credentials (or combined with credentials) may be appropriate for teaching particular courses. Consideration of other teaching qualifications either in conjunction with or in lieu of academic credentials must be made on a case-by-case basis. Such cases should be exceptional and the evidence of other demonstrated competencies and achievements provided must be compelling. It should

also show substantial and significant evidence of professional progress as related to the faculty member's teaching assignment.