



Mechanical and Aerospace Engineering

ACTIVE TEACHING DISCIPLINES		
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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.
14.0201	Aerospace, Aeronautical and Astronautical/Space Engineering.	A program that prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of aircraft, missiles, space vehicles, and their
14.1901	Mechanical Engineering	A program that prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of physical systems used in manufacturing and end-product systems used for specific uses, including machine tools, jigs and other manufacturing equipment; stationary power units and appliances; engines; self-propelled vehicles; housings and containers; hydraulic and electric systems for controlling movement; and the integration of computers and remote control with operating systems.
14.1001	Electrical, Electronics and Communications Engineering.	A program that prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of electrical and electronic systems and their components, including electrical power generation systems; and the analysis of problems such as superconductor, wave propagation, energy storage and retrieval, and reception and amplification.

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 Mechanical and Aerospace Engineering (MAE) Department offers these programs:

- Aerospace BS
- Aerospace MS

- Mechanical Engineering BS
- Mechanical Engineering MS
- Mechanical Engineering Graduate Certificate Programs (CAD/CAM Technology, HVAC Engineering, Materials Failure Analysis)
- Mechanical Engineering PhD

The BS Aerospace Engineering program is accredited by the Accreditation Board for Engineering and Technology (ABET). Students majoring in Mechanical Engineering select one or more of 3 specialty tracks chosen from Energy Systems, Mechanical Systems or Materials.

Two specialty tracks are offered in the Aerospace MS program: Space Systems Design & Engineering and Thermofluid Aerodynamic Systems Design & Engineering. There is no Aerospace Engineering Ph.D. program. EAS prefix designates courses in the Aerospace Engineering program.

The BS Mechanical Engineering program is accredited by the Accreditation Board for Engineering and Technology (ABET). Several specialty tracks are offered in the Mechanical MS program: Computer-Aided Mechanical Engineering Mechanical Systems, Miniature Engineering Systems, Thermofluids, and Professional. EML prefix designates courses in the Mechanical Engineering program.

The interdisciplinary nature of the Aerospace and Mechanical Engineering programs results in overlapping courses. It is therefore appropriate to have faculty whose home is in one program, teach in any of the other programs. Other engineering disciplines are also appropriate to teach in the MAE department. For example, similar instrumentation and characterization techniques are commonly used by materials scientists and engineers, and chemists and physicists. The research and teaching area of MEMS routinely requires combined expertise of materials science, mechanical engineering, and electronics engineering. Bio-MEMS research certainly involves experts in biology and chemistry.

All engineers, by nature of their training and education, are applied physicists and applied mathematicians; however, it is appropriate to have PhD faculty in Physics and Mathematics with an appreciation of engineering teach engineering courses where course content may require in depth expertise in Physics and Mathematics.

The MAE department benefits from close ties with the Advanced Materials Processing and Analysis Center (AMPAC), the Florida Solar Energy Center (FSEC), the Institute for Simulation and Training (IST), the Electrical and Computer Engineering department

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]

- Aerospace Engineering:
 - o PhD Aerospace Engineering
- Mechanical Engineering
 - o PhD Mechanical Engineering

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)

Aerospace Engineering:

- Engineering
- Engineering Mechanics
- Mechanics
- Theoretical and Applied Mechanics
- Mechanical Engineering
- Civil Engineering
- Electrical Engineering
- Fluids Engineering

Mechanical Engineering

- Applied Mathematics
- Engineering
- Engineering Mechanics
- Mechanics
- Theoretical and Applied Mechanics
- Aerospace Engineering
- Electrical Engineering
- Electronic Engineering
- Chemical Engineering
- Civil Engineering
- Fluids Engineering
- Industrial Engineering
- Nuclear Engineering
- Computer Engineering
- Metallurgy
- Metallurgical Engineering
- Materials Science and 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:

- Mathematics
- Applied Mathematics

- Physics
- Astro/Space Science
- Chemistry
- Computer Engineering
- Computer Science

Mechanical Engineering:

- Mathematics
- Physics
- Chemistry
- Computer Science

In addition, those fitting the following broad definition may be qualified to teach at the undergraduate and graduate level in MAE.

- PhD or another Doctoral degree in a closely related Engineering or Science Discipline with a significant research component in the form of a dissertation.

Those fitting the following criterion may be qualified to teach at the undergraduate level in MAE. [4]

- A non-terminal MS degree or a Doctor of Engineering without a dissertation in a closely related Engineering or Science Discipline.

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

Certain courses that emphasizes real life, practical engineering aspects may be taught by instructors with a Professional Engineering license and/or extensive industrial experience in research and development in the particular topics covered by the course.

[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.