

DEFINITION OF ENGINEERING/ENGINEERING TECHNOLOGY

According to the Accreditation Board for Engineering and Technology (ABET):

ENGINEERING is the *profession* in which a *knowledge of the mathematical and natural sciences* gained by *study, experience, and practice* is applied with *judgment* to develop ways to utilize *economically* the *materials and forces of nature* for the *benefit of mankind*.

ENGINEERING TECHNOLOGY is the part of the technological field that requires the *application of scientific and engineering knowledge and methods* combined with *technical skills* in support of engineering activities; it lies in the *occupational spectrum between the craftsman and the engineer* at the end of the spectrum closest to the engineer.

Skills of Engineering and Engineering Technology Graduates for ABET Accreditation –
Criterion 3:

Skills	Engineering Criteria 2000	Technology Criteria 2000
Apply knowledge of mathematics, science, and engineering	(a)	(b)
Design and conduct experiment, analyze and interpret data	(b)	(c)
Design a system, component, or processes	(c)	(d)
Function on multi-disciplinary teams	(d)	(e)
Identify, formulate, and solve engineering problems	(e)	(f)
Understand professional and ethical responsibility	(f)	(i)
Communicate effectively	(g)	(g)
Understand impact of engineering solutions in a global and societal context	(h)	(j)
Recognize the need for, and ability to engage in life-long learning	(i)	(h)
Know contemporary issues	(j)	(j)
Use techniques, skills, and modern engineering tools	(k)	(a)
Commit to quality, timeliness, and continuous improvement		(k)

Engineering and Technology Fields at WMU

Civil Engineering – Concern with the analysis, design, methods, and materials of large structures such as bridges, highway, water treatment facilities, and traffic and transportation systems.

Construction Engineering – Plan, design, and supervise the construction and maintenance of structures and facilities, including project management, estimating, scheduling, business accounting, finance, and public policy.

Mechanical Engineering – Two main stems: Mechanical System such as automobiles, airplanes, washing machines, etc., and Thermal System such as power plants, refrigeration, solar and alternative energies.

Aeronautical Engineering – Concern with design and analysis of airfoils, control system, propulsion (turbine and reciprocating engines) and aircraft system.

Electrical Engineering – Concern with power generation and distribution, consumer electronic goods, and telecommunication goods and networks.

Computer Engineering – Concern with digital computer hardware and software.

Industrial Engineering – Concern with the optimization of resources (human, materials, facilities, and time) in operation of systems.

Manufacturing Engineering – Concern with the design and implementation of manufacturing facilities and processes to optimize productivity.

Chemical Engineering – Concern with industrial chemicals such as solvents, plastics, paints, adhesives, etc., and with food and pharmaceuticals.

Paper Engineering – Concern with papermaking, recycling, non-wood fibers, and coatings.

Engineering Graphics & Design Technology – Concern with the use of CAD and CAM to support, implement, and document engineering design and manufacturing.

Manufacturing Engineering Technology – Concern with the application of resources (materials, people, facilities, time) to create efficient production systems and to implement design to produce products.

Engineering Management Technology – Manage, administer and supervise the operation of systems designed by engineers to improve productivity and efficiency.

Computer Science – Study algorithm to describe and transform information using digital computer hardware and software, as well as programming and execution of programs.

Imaging – Concern with imaging and printing management, such as inks, coatings, etc.

Industrial Design -- Combine aesthetics with knowledge of manufacturing and materials to create functional and appealing products.

Student Chapters of Engineering Organizations

COMPUTER SCIENCE

Upsilon Pi Epsilon

Dr. Mark Kerstetter, Faculty Advisor

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CIVIL & CONSTRUCTION ENGINEERING

Collegiate Construction Association

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American Society of Civil Engineers

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ELECTRICAL/COMPUTER ENGINEERING

Institute of Electrical and Electronics Engineers

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INDUSTRIAL/MANUFACTURING ENGINEERING

Alpha Pi Mu

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Tau Alpha Pi

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Dr. Alamgir Choudhury, Faculty Advisor

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American Foundry Society/Foundry Educational Foundation

Dr. Sam Ramrattan, Faculty Advisor

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American Society for Quality Control

Dr. David Lyth, Faculty Advisor

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Institute of Industrial Engineers

Dr. Tycho Fredericks, Faculty Advisor

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Society of Manufacturing Engineers

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Society of Plastics Engineers

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MECHANICAL/AERONAUTICAL ENGINEERING

Pi Tau Sigma

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American Institute of Aeronautics and Astronautics

Dr. Parviz Merati, Faculty Advisor
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American Society of Heating, Refrigeration, and Air Conditioning Engineers

Dr. Ho Sung Lee, Faculty Advisor
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American Society of Mechanical Engineers

Dr. Koorosh Naghshineh, Faculty Advisor
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CHEMICAL ENGINEERING, PAPER ENGINEERING, & IMAGING

Ts'ai Lun

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Chemical Engineering Club

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Graphic Arts Society

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Dr. Dan Fleming, Faculty Advisor
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Technical Association of the Graphics Arts

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INDUSTRIAL DESIGN

Industrial Design Society of America

Mr. David Middleton, Faculty Advisor

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MATERIALS ENGINEERING

ASM International American Materials Society
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INTERDISCIPLINARY

Tau Beta Pi

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Computer Club

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National Society of Black Engineers

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National Society of Professional Engineers

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Society of Automotive Engineers

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Society of Women Engineers

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Theta Tau

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