A GUIDE TO ACCREDITATION

University of Arkansas
Fayetteville, Arkansas
Department of Mechanical Engineering
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This document has been prepared to assist students, alumni, employers, and friends in understanding the process of accreditation and its importance in their engineering careers. The B.S. in Mechanical Engineering awarded by University of Arkansas in Fayetteville is offered at Fayetteville and Fort Smith (junior and senior years only) and is accreditated by ABET, Inc. ABET, Inc. will be doing an on-site visit for the mechanical engineering program in fall 2008. Some of this material has been adapted from other sources.

What Is Accreditation?

In the United States, accreditation is used to assure quality in educational institutions and programs. Accreditation is a voluntary, non-governmental process of peer review. It requires an educational institution or program to meet certain, defined standards or criteria. Accreditation is sometimes confused with certification. In general, institutions and programs are accredited, and individuals are certified.

Accreditation serves to notify:

- Parents and prospective students that a program has met minimum standards;
- Faculty, deans and administrators of a program's strengths and weaknesses and of ways to improve the program;
- Employers that graduates are prepared to begin professional practice;
- Taxpayers that their funds are spent well; and
- The public that graduates are aware of public health and safety considerations.

The Importance of Accreditation

The importance of accreditation goes far beyond the quality of a student's educational program. In the U.S., many states require licensure of engineers for professional practice. State licensing boards view graduation from an ABET-accredited engineering program (www.abet.org) as the first step in the licensure process. Along with work experience, the state board for engineering registration also requires passing a series of tests on professional knowledge. Graduation from an ABET-accredited program is often required of engineers who have studied in the U.S. and plan to practice back in their home countries. In some instances, ABET accreditation may permit students to receive federal funds in the form of scholarships, loans, and grants.

To an even greater degree, accreditation, and all of the professional benefits that accompany it, is an integral part of what industry in the U.S. seeks in young engineers. Employers, as well as ABET, recognize that well-educated students become valuable employees.

ASME Criteria for Mechanical Engineering Programs

The program must demonstrate that graduates have the ability to apply principles of engineering, basic science, and mathematics (including multivariate calculus and differential equations) to model, analyze, design, and realize physical systems, components or processes; and have the ability to work professionally in both thermal and mechanical systems areas.

(Submitted by the American Society of Mechanical Engineers) Reprinted from ABET Inc.

ABET Criteria for Engineering Programs

Engineering programs must demonstrate that their students attain the following outcomes:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) an ability to function on multidisciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

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The ABET Accreditation Process

In the U.S. institutions choose which level of a program will be considered for accreditation. Most often, the institution selects its engineering programs at the baccalaureate level for accreditation review. The actual accreditation process examines the program's students, curriculum, faculty, administration, facilities, and institutional support. This information is gathered by the program as part of the self-study process. This is followed by a campus visit during which the program is reviewed against its self-study and the established criteria. The information gathered from the self-study and campus evaluation report then become the determining factors for accreditation. More importantly, this self-study and evaluation report can be used to improve a program's delivery of engineering knowledge in the future.

Programs either receive accreditation or are denied accreditation. Accreditation does not provide a ranking of educational programs. ABET accreditation is for a maximum of six years, after which a program must again be reviewed.

The U.S. Department of Education recognizes ABET for the type of specialized accreditation it provides. ABET seeks recognition by the Department of Education voluntarily, not as a requirement. The U.S. Department of Education also provides students with information on the various types of recognized accreditation and the organizations responsible for different types of accreditation. For more information on this and other educational issues, visit the web site for the U.S. Department of Education at www.ed.gov or telephone 1-800-USA-LEARN. The Council for Higher Education Accreditation (CHEA) also recognizes ABET for its accreditation of engineering, engineering technology and engineering-related programs. The CHEA web site can be accessed at www.chea.org or telephone (202) 955-6126.

ABET accreditation signifies that these programs have met specific criteria that is determined by engineering professionals working in industry and education. Accreditation then becomes a tool students can use to determine a program's responsiveness to the needs of the profession. It is with this assurance that students can make well-informed decisions when choosing to pursue an engineering degree in the U.S.

University of Arkansas Mechanical Engineering Accreditation

- The Department of Mechanical Engineering (B.S.M.E.) has been continuously accredited since 1936. Engineering programs in the U.S. were first accreditated by ABET (at that time ECPD) in 1936. The

University of Arkansas was one of the first mechanical engineering programs to be accreditated west of the Mississippi River.

- The next General Review of the program will be made during 2008-09. The site visit will occur in the fall 2008.

University of Arkansas Department of Mechanical Engineering Vision

Approved by the Faculty: October 2006

The vision of the Department of Mechanical Engineering at the University of Arkansas is:

To become and be recognized as a top tier undergraduate and graduate mechanical engineering program in the nation.

University of Arkansas Department of Mechanical Engineering Mission

Approved by the Faculty: October 2006

The mission of the Department of Mechanical Engineering at the University of Arkansas is threefold:

1. *Teaching.* To provide a high-quality educational experience for undergraduate and graduate students that enables them to become leaders in their chosen professions.
2. *Research.* To create, explore, and develop innovations in engineering and science through undergraduate and graduate research.
3. *Service.* Provide beneficial service to the local, state, national, and international industries and communities via educational, technical, and professional activities.

University of Arkansas Department of Mechanical Engineering Program Educational Objectives

Approved and Revised by the Faculty: April 1998, April 2002, October 2006

The Program Educational Objectives of the BSME program in the Department of Mechanical Engineering are to produce graduates who:

1. effectively analyze and design mechanical systems and energy systems;
2. contribute to the economic development of Arkansas and the world through the practice of Mechanical Engineering;
3. meet or exceed the needs and expectations of Mechanical Engineering employers in industry, government, and private practice;
4. engage in professional activities that promote the Mechanical Engineering profession and provide continuing self-development, and;
5. succeed in graduate study and research, if pursued.

University of Arkansas Department of Mechanical Engineering Program Outcomes

Approved and Revised by the Faculty: April 1998, April 2002, October 2006

Upon completion of the BSME degree program, graduates can:

1. Can apply advanced mathematics and the physical sciences to the solution of practical problems.
2. Understand and apply knowledge current methods of mechanics, material science, and thermal sciences to analyze engineering systems and their components.
3. Understand relationships between the mechanical, thermal, and manufacturing properties of materials.
4. Can design and conduct experiments and analyze their results.

5. Can design engineering systems and components by making choices among alternatives using realistic constraints such as economic, environmental, social, political, ethical, health, and safety factors; manufacturability; and sustainability.
6. Can use available tools to work productively.
7. Can communicate well verbally, graphically, and in writing.
8. Can work effectively in multi-disciplinary teams.
9. Appreciate the value of research.
10. Recognize the need for professional development, continued learning, and awareness of current professional issues.
11. Understand the meaning of being a professional and the associated ethical responsibility.
12. Understand the global, economic, environmental, and societal importance of their work as engineers.

If you have any questions about the accreditation process, please contact:

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