

Chapter A-E 4

PROFESSIONAL ENGINEER REGISTRATION

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Note: Chapter A-E 4 as it existed on February 28, 1987 was repealed and a new chapter A-E 4 was created effective March 1, 1987.

A-E 4.01 Authority and purpose. The rules in this chapter are adopted under authority in ss. 15.08 (5) (b), 227.11, 443.04, 443.05, 443.09 and 443.10, Stats. The purpose of rules in this chapter is to interpret basic education, experience and examination requirements for registration as a professional engineer as specified in ss. 443.04, 443.05, 443.09 and 443.10, Stats.

History: Cr. Register, February, 1987, No. 374, eff. 3-1-87.

A-E 4.02 Applications. Applications for certification as an engineer-in-training and registration as a professional engineer are available upon request to the board office located at 1400 East Washington Avenue, Madison, Wisconsin 53702. An applicant who files an application but who does not comply with a request for information related to the application within one year from the date of the request shall file a new application.

History: Cr. Register, February, 1987, No. 374, eff. 3-1-87; am. Register, May, 1990, No. 413, eff. 6-1-90.

A-E 4.03 Engineering experience. To qualify as satisfactory experience in engineering work for the purpose of meeting requirements of s. 443.04, Stats., an applicant's experience shall include the application of engineering principles and data and shall demonstrate an applicant's progressive development of competence to do engineering work. The experience shall be acquired in the areas of engineering practice listed in subs. (1) to (7) or in other areas of engineering practice or academic course work which in the opinion of the board provides the applicant with a knowledge of engineering principles and data at least equivalent to that which would be acquired by experience in the areas of practice listed. Experience in all areas listed is not required.

(1) **RESEARCH AND DEVELOPMENT.** (a) Problem identification, including consideration of alternative approaches to problem solving;

(b) Planning, including selecting a theoretical or experimental approach;

(c) Execution of plan, including completing design calculations;

(d) Interpreting and reporting results, including,

1. Evaluating project feasibility studies;

2. Analyzing research and development data;

3. Producing interpretive reports;

4. Formulating conclusions and recommendations; and,
 5. Producing final reports.
- (2) DESIGN. (a) Problem identification, including,
1. Identifying design objectives;
 2. Identifying possible design concepts or methods;
 3. Selecting methods to be employed in consideration of aesthetics, cost and reliability;
 4. Defining performance specifications and functional requirements such as materials, energy balances and environmental considerations;
 5. Formulating conceptual design specifications; and,
 6. Defining physical properties of all key materials.
- (b) Planning, including defining safety, health and environmental constraints;
- (c) Execution of plan, including,
1. Developing design concepts;
 2. Conducting feasibility studies;
 3. Evaluating design and design methods;
 4. Solving design problems;
 5. Preparing designs, layouts and models;
 6. Selecting materials and components;
 7. Conducting value analysis of design;
 8. Producing final designs;
 9. Preparing supporting technical information;
 10. Preparing detailed working drawings;
 11. Preparing specifications and data sheets; and,
 12. Interacting with engineers from other areas of work such as research and development and construction.
- (d) Interpreting and reporting results, including,
1. Evaluating design for conformity to specifications;
 2. Evaluating design solutions for efficiency, economic and technical feasibility and economic alternatives;
 3. Evaluating design impact on public health, safety and welfare;
 4. Evaluating design solution for adherence to laws and codes;
 5. Evaluating product liability risk;
 6. Reviewing designs with clients or management; and,

7. Preparing final reports.

(e) Implementation of results, including interacting with engineers from other disciplines of engineering;

(3) CONSTRUCTION. (a) Problem identification, including checking working drawings and specifications; and,

(b) Execution of plan, including,

1. Consulting with designers; and,

2. Identifying and requesting design changes;

(4) MANUFACTURING, PRODUCTION AND OPERATIONS. (a) Planning, including,

1. Proposing design or methods improvement; and,

2. Planning operational processes and strategies;

(b) Execution of plan, including,

1. Preparing equipment, system and process specifications; and,

2. Determining feasibility of new or improved products, systems and processes;

(c) Interpreting and reporting results, including preparing final reports;

(5) MAINTENANCE. (a) Problem identification, including determining causes of failures in equipment, structures or schedules; and,

(b) Interpreting and reporting results, including reporting the causes of failures in equipment, structures or schedules;

(6) ADMINISTRATION. Administration and management, including execution of plan by communicating with others;

(7) OTHER ENGINEERING TASKS. (a) Conducting systems analysis or operations research; and,

(b) Serving as a consultant or specialist to individual or business clients.

History: Cr. Register, February, 1987, No. 374, eff. 3-1-87.

A-E 4.04 Experience credit limitation. Not more than one year of satisfactory experience credit may be granted for any calendar year.

History: Cr. Register, February, 1987, No. 374, eff. 3-1-87.

A-E 4.05 Education as an experience equivalent for registration as a professional engineer. (1) For the purpose of meeting experience requirements for registration as a professional engineer in s. 443.04 (1), Stats., an applicant may claim certain education as equivalent to experience in engineering as provided in s. 443.04 (2), Stats. The engineer section grants an experience equivalent for education according to the table shown in figure 4.05 (1).

FIGURE 4.05 (1)

TABLE OF EDUCATION AND EXPERIENCE EQUIVALENTS

| Education | Experience Equivalent with Degree | Experience Equivalent for each year of Education without Degree |
|--|---|---|
| B.S. Engineering [Accredited by Accrediting Board for Engineering and Technology, (ABET)] | 4 years | 1 year |
| B.S. Engineering (Not accredited by ABET) | 3-1/2 years | 7/8 year |
| B.S. Engineering Technology (ABET accredited) | 3 years | 3/4 year |
| B.S. Engineering Related Sciences (e.g. Physics, Chemistry, Math, etc.) | 3 years | 3/4 year |
| B.S. Engineering Technology (non-ABET accredited) | Not more than 2-1/2 years | 2/3 year |
| Other B.S. Degrees | Not more than 2 years | 1/2 year |
| Engineering Experience in obtaining M.S. in Engineering | 1 year | N/A |
| Engineering Experience in obtaining Ph.D. in Engineering or Engineering Related Programs | 1 year | N/A |
| Engineering Experience in a Cooperative Educational Program | Determined for each application. (Maximum allowable credit is one year.) | Determined for each application. (Maximum allowable credit is one year.) |

(2) The engineer section shall approve all curricula in engineering that are accredited by the accreditation board for engineering and technology (ABET) or equivalent curricula.

(3) If the degree is from an international educational institution, the applicant must provide an official evaluation by a transcript evaluation service acceptable to the board which shows that the degree is equivalent to a B.S. or higher degree in an engineering program accredited by the accreditation board for engineering and technology (ABET). The board may approve the degree if it finds such equivalence.

(4) To obtain equivalent work experience credit for completion of a cooperative educational program, an applicant shall submit a record of work completed in the cooperative educational program with an application for registration. The engineer section shall determine the amount of equivalent experience awarded for completion of a cooperative educational program by evaluating the record of work completed using the criteria in s. A-E 4.03. No more than 1 year of equivalent experience credit may be awarded under this subsection.

History: Cr. Register, February, 1987, No. 374, eff. 3-1-87; am. (1), cr. (3) and (4), Register, January, 1993, No. 445, eff. 2-1-93.

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A-E 4.06 Professional engineer: types of applications and requirements. Sections 443.04 (1) (a) through (d), Stats., provide 4 methods by which an applicant may qualify for registration as a professional engineer. Requirements for each type of application are as follows:

(1) **ENGINEERING DIPLOMA.** Applicants under s. 443.04 (1) (a), Stats., shall complete the fundamentals of engineering, the principles and practice of engineering and the barrier free design parts of the examination.

(2) **8 YEARS EXPERIENCE.** Applicants under s. 443.04 (1) (b), Stats., shall complete the fundamentals of engineering, the principles and practice of engineering and the barrier free design parts of the examination.

(3) **12 YEARS EXPERIENCE.** Applicants under s. 443.04 (1) (c), Stats., shall complete the principles and practice of engineering and the barrier free design parts of the examination and shall submit a record which specifically describes the knowledge of mathematics, the physical sciences and the principles of engineering which the applicant has acquired by practical experience or professional education.

(4) **DIPLOMA AND 8 YEARS EXPERIENCE.** Applicants under s. 443.04 (1) (d), Stats., shall submit a statement describing provisions of Wisconsin law which govern the practice of engineering and which concern the design needs of people with physical disabilities; and evidence that the applicant has had at least 6 months of engineering experience in Wisconsin or has had sufficient contacts with this state to make the applicant familiar with Wisconsin engineering law and practice.

History: Cr. Register, February, 1987, No. 374, eff. 3-1-87.

A-E 4.07 Engineer-in-training. An applicant for certification as an engineer-in-training shall take and pass a fundamentals examination. Engineer-in-training applicants may also take the principles and practice, and the barrier free design examinations.

History: Cr. Register, February, 1987, No. 374, eff. 3-1-87.

A-E 4.08 Examinations. (1) SCOPE OF WRITTEN EXAMINATIONS. (a) The fundamentals examination requires an understanding of the physical and mathematical sciences involved in the fundamentals of engineering. The duration of the examination is 8 hours, administered in one day.

(b) The principles and practice examination requires the ability to apply engineering principles and judgment to problems in general engineering fields such as chemical, civil, electrical and mechanical fields. Questions involving economic analysis and the design needs of people with physical disabilities and relevant statutes and codes shall be included. The duration of the examination is 8 hours, administered in one day.

(c) The barrier free design examination requires the applicant to demonstrate knowledge of the design needs of people with physical disabilities.

(2) **REQUIREMENTS FOR ENTRANCE TO EXAMINATIONS.** To be eligible to take the examinations on fundamentals of engineering and principles and practice of engineering, an applicant shall have 4 years of qualifying engineering work experience or a combination of academic credit or engineering work experience which totals 4 years. Applicants who have obtained senior standing in an educational program of study of at least 4

years which leads to a baccalaureate degree in engineering or engineering technology are eligible to take the examination sections.

(3) **APPLICATION FOR EXAMINATION.** An application for examination must be filed with the board no later than 2 months before the scheduled date for the examination.

(4) **EXAMINATION AND REFUND FEES.** The fee for an engineer-in-training or professional engineer examination and requirements for refund of fees are specified in s. 440.05, Stats., and ch. RL 4.

(5) **PLACE AND TIME OF EXAMINATIONS.** The examinations shall be held at sites and on dates designated by the board.

(6) **GRADING OF WRITTEN EXAMINATIONS.** Experience ratings may not be weighed as a part of the examinations.

(7) **EXAMINATION REVIEW.** (a) *One-year limitation.* Any applicant for an engineer examination may only review questions on any part of an examination failed by the applicant within one year from the date of the examination, as specified in s. 443.09 (6), Stats.

(b) An applicant shall contact the board office, located at 1400 East Washington Avenue, Madison, Wisconsin 53702, to schedule an appointment to review the appropriate examination parts. The applicant may take notes on the examination questions reviewed. No notes may be retained by the applicant following the review. All notes taken during the review shall be placed in the applicant's file. The review may not take place within 30 days prior to a scheduled examination.

History: Cr. Register, February, 1987, No. 374, eff. 3-1-87; am. (1) (b), Register, May, 1990, No. 413, eff. 6-1-90.

A-E 4.09 Application contents. An application shall include:

(1) Transcripts or apprenticeship records verifying the applicant's education and training;

(2) References from at least 5 individuals having personal knowledge of the applicant's experience in professional engineering, 3 of whom are licensed professional engineers;

(3) A chronological history of the applicant's employment; and

(4) Any additional data, exhibits or references showing the extent and quality of the applicant's experience that may be required by the professional engineers section.

History: Cr. Register, January, 1993, No. 445, eff. 2-1-93.