

## 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**Note:** Chapter A-E 4 as it existed on February 28, 1987 was repealed and a new chapter A-E 4 was created effective March 1, 1987.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 Requirements for registration as a professional engineer.** (1) Requirements for registration under s. 443.04 (1) (a), Stats., are as follows:

(a) A bachelor of science degree from a school or college of engineering accredited by the engineering accreditation commission of the accreditation board for engineering and technology (EAC/ABET) in an engineering course of not less than 4 years, or a diploma of graduation in an engineering course of not less than 4 years deemed by the board to be equivalent to a B.S. degree in engineering from an EAC/ABET accredited school or college of engineering.

(b) Not less than 4 years of experience in engineering work of a character satisfactory to the board indicating that the applicant is competent to practice engineering. Experience gained in obtaining a master's degree in engineering and experience gained in obtaining a Ph.D. in engineering or in an engineering related program shall each be deemed equivalent to one year of qualifying experience.

(c) Successful completion of the fundamentals of engineering, the principles and practice of engineering and the barrier free design parts of the board's examination.

(2) Requirements for registration under s. 443.04 (1) (b), Stats., are as follows:

(a) A specific record of 8 or more years of experience in engineering work of a character satisfactory to the board indicating that the applicant is competent to be placed in responsible charge of the work, or a combination of engineering experience and equivalent education totaling 8 years.

(b) Successful completion of the fundamentals of engineering, the principles and practice of engineering and the barrier free design parts of the board's examination.

(3) Requirements for registration under s. 443.04 (1) (c), Stats., are as follows:

(a) A specific record of not less than 12 years experience in engineering work of a character satisfactory to the board indicating that the applicant is competent to practice engineering, or a combination of experience and equivalent education totaling 12 years.

(b) Submission of documentary evidence establishing to the satisfaction of the board that the applicant has acquired by practical experience or professional education sufficient knowledge of mathematics, the physical sciences and the principles of engineering to competently practice engineering.

(c) Successful completion of the principles and practice of engineering and the barrier free design parts of the board's examination.

(4) Requirements for registration under s. 443.04 (1) (d), Stats., are as follows:

(a) A bachelor of science degree from a school or college of engineering accredited by the engineering accreditation commission of the accreditation board for engineering and technology (EAC/ABET) in an engineering course of not less than 4 years, or a diploma of graduation in an engineering course of not less than 4 years deemed by the board to be equivalent to a B.S. degree in engineering from an EAC/ABET accredited school or college of engineering.

(b) Not less than 8 years of experience in engineering work of a character satisfactory to the board indicating that the applicant is competent to practice engineering. Experience gained in obtaining a master's degree in engineering and experience gained in obtaining a Ph.D. in engineering or in an engineering related program shall each be deemed equivalent to one year of qualifying experience.

(c) Submission of a statement describing provisions of Wisconsin law which govern the practice of engineering and which concern the design needs of people with physical disabilities.

(d) Submission of 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.

(5) If an engineering degree is from an international educational institution, the applicant shall 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 engineering accreditation commission of the accreditation board for engineering and technology. The board may approve the degree if it finds equivalence.

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; r. and recr. Register, March, 1996, No. 483, eff. 4-1-96.

**A-E 4.06 Education as an experience equivalent for registration.** For the purpose of meeting experience requirements for registration as a professional engineer under s. 443.04 (1) (b) and (c), Stats., an applicant may claim education as equivalent to experience as follows:

(1) Completion of each year of engineering coursework at a school or college of engineering accredited by the engineering accreditation commission of the accreditation board for engineering and technology (EAC/ABET) in an engineering program of not less than 4 years, or completion of each year of engineering coursework at a school or college of engineering in an engineering program of not less than 4 years deemed by the board to be equivalent to an EAC/ABET accredited school or college of engineering program, shall be deemed equivalent to one year of qualifying experience.

(2) Completion of each year of engineering coursework at a school or college of engineering in an engineering program of not less than 4 years deemed by the board not to be equivalent to an EAC/ABET accredited school or college of engineering shall be deemed equivalent to not more than 7/8 of one year of qualifying experience.

(3) Completion of each year of coursework in engineering technology at a school or college of engineering technology accredited by the technology accrediting commission of the accreditation board for engineering and technology in an engineering technology program of not less than 4 years shall be deemed equivalent to 3/4 of one year of qualifying experience.

(4) Completion of each year of coursework in engineering technology at a school or college of engineering technology not accredited by the technology accreditation commission of the accreditation board for engineering and technology in an engineering technology program of not less than 4 years shall be deemed equivalent to not more than 2/3 of one year of qualifying experience.

(5) Completion of each year of coursework leading to a B.S. degree in engineering related sciences, including but not limited to physics, mathematics and chemistry, from a college or university accredited by a regional accrediting agency approved by the state board of education in the state in which the college or university is located shall be deemed equivalent to 3/4 of one year of qualifying experience.

(6) Completion of each year of coursework leading to a B.S. degree in areas other than engineering or engineering related

sciences from a college or university accredited by a regional accrediting agency approved by the state board of education in the state in which the college or university is located shall be deemed to be equivalent to not more than 1/2 of one year of qualifying experience.

(7) Engineering experience gained in a cooperative educational program shall be evaluated on an individual basis but may not be deemed to be equivalent to more than a total of one year of qualifying experience. To obtain equivalent work experience credit, an applicant shall submit a record of work completed in the cooperative educational program with the application for registration. The engineering section shall determine the amount of equivalent experience awarded by evaluating the record of work completed using the criteria in s. A-E 4.03.

**History:** Cr. Register, February, 1987, No. 374, eff. 3-1-87; r. and recr. Register, March, 1996, No. 483, eff. 4-1-96.

**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.

(c) The barrier free design examination requires the applicant to demonstrate knowledge of relevant statutes, rules and regulations relating to the needs of people with physical disabilities.

**(2) REQUIREMENTS FOR ENTRANCE TO EXAMINATIONS.** (a) To be eligible to take the examination on fundamentals of engineering, the applicant shall:

1. Be of not less than senior standing in an accredited B.S. engineering program;
2. Have at least 4 years of engineering experience qualifying under s. A-E 4.03; or
3. Have a combination of engineering experience qualifying under s. A-E 4.03 and education qualifying under s. A-E 4.05 totalling at least 4 years.

(b) To be eligible to take the examination on the principles and practices of engineering, the applicant shall:

1. Have a B.S. degree from an accredited engineering program, and at least 4 years of engineering experience qualifying under s. A-E 4.03;

2. Have at least 8 years of engineering experience qualifying under s. A-E 4.03; or

3. Have a combination of engineering experience qualifying under s. A-E 4.03 and education qualifying under s. A-E 4.05 totalling at least 8 years.

**(3) APPLICATION FOR EXAMINATION.** An application for examination must be filed with the board no later than 60 days before the scheduled date for the examination. An applicant applying for reexamination shall file the application for reexamination no later than 45 days before the scheduled date for the next 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.* An applicant for an engineer examination may 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. An applicant may review the examination only once.

(b) *Review procedure.* Failing candidates shall be notified of the procedure to schedule a review of 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. The review may not take place within 30 days prior to a scheduled examination. If the section confirms the failing status following its review, the application shall be deemed incomplete, and the applicant may be reexamined.

**History:** Cr. Register, February, 1987, No. 374, eff. 3-1-87; am. (1) (b), Register, May, 1990, No. 413, eff. 6-1-90; r. and recr. (2), Register, June, 1993, No. 450, eff. 10-1-93; am. (1) (b) and (c), Register, December, 1993, No. 456, eff. 1-1-94; am. (3), Register, August, 1995, No. 476, eff. 9-1-95; am. (7) (b), Register, March, 1996, No. 483, eff. 4-1-96; am. (7) (a), Register, October, 1996, No. 490, eff. 11-1-96.

**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.