

CHAPTER 4  
ENGINEERING LICENSURE  
[Prior to 11/14/01, see 193C—1.4(542B)]

**193C—4.1(542B) Requirements for licensure by examination.** The specific requirements for initial licensing in Iowa are established in Iowa Code section 542B.14, and it is the board's intention to issue initial licensure only when those requirements are satisfied chronologically as set forth in the statute.

**4.1(1)** First, the applicant for initial licensure in Iowa must satisfy the educational requirements as follows:

*a.* Graduation from an engineering program of four years or more.

(1) If an applicant did not graduate from an Accreditation Board of Engineering and Technology/Engineering Accreditation Commission (ABET/EAC) or Canadian Engineering Accreditation Board (CEAB) approved curriculum, the applicant must also complete, in addition to the engineering degree, a year of practical experience satisfactory to the board after receiving the engineering degree and prior to taking the Fundamentals of Engineering examination.

(2) An engineering technology curriculum does not constitute an engineering program of four years or more.

*b.* If an applicant obtained an associate of science degree or a more advanced degree between July 1, 1983, and June 30, 1988, the board shall only require satisfactory completion of a minimum of two years of postsecondary study in mathematics, physical sciences, engineering technology, or engineering at an institution approved by the board and six years of practical experience which, in the opinion of the board, is of satisfactory character to properly prepare the applicant for the Fundamentals of Engineering examination. (Applicants qualifying under this subrule must successfully complete the Fundamentals of Engineering examination by June 30, 2001.)

**4.1(2)** Second, the applicant must successfully complete the Fundamentals of Engineering examination.

*a.* An applicant may take the Fundamentals of Engineering examination anytime after the educational requirements as specified above are completed, but the applicant must successfully complete the Fundamental of Engineering examination prior to taking the Principles and Practice of Engineering examination.

*b.* College seniors studying an ABET/EAC or CEAB approved curriculum may take the Fundamentals of Engineering examination during the final academic year. Applicants will be permitted to take the examination during the testing period which most closely precedes anticipated graduation. However, an official transcript from the applicant's college or university verifying that the applicant graduated must be sent by the registrar to the board office before an applicant's examination results will be released.

*c.* An applicant who graduated from a satisfactory engineering program and has 25 years or more of work experience satisfactory to the board shall not be required to take the Fundamentals of Engineering examination.

*d.* An applicant who has earned a Doctor of Philosophy degree from an institution in the United States of America with an accredited Bachelor of Science engineering degree program in the same discipline, or a similar doctoral degree in a discipline approved by the board, shall not be required to take the Fundamentals of Engineering examination.

**4.1(3)** Third, the applicant must successfully complete the Principles and Practice of Engineering examination.

*a.* To qualify to take this examination, the applicant must present a record of four years or more of practical experience in engineering work which is of a character satisfactory to the board. This experience must have been obtained after the receipt of the qualifying education and prior to the application due date for the examination.

*b.* An applicant for the Principles and Practice of Engineering examination shall have a minimum of one year of practical experience in the United States of America or a territory under its jurisdiction.

**4.1(4) Work project description.** An applicant for initial licensure as a professional engineer must include with the application a statement of approximately 200 words describing a significant project on which the applicant worked closely during the previous 12 months. The statement shall describe the applicant's degree of responsibility for the project and shall identify the project's owner and its location. The statement shall be signed and dated. Criteria the board shall use in evaluating the acceptability of the project as qualifying experience for the applicant shall include, but not be limited to, the following:

- a. The degree to which the project and the experience described have progressed from assignments typical of initial assignments to those more nearly expected of a licensed professional;
- b. The scope and quality of the professional tutelage experienced by the applicant;
- c. The technical decisions required of the applicant in the project; and
- d. The professional decisions required of the applicant.

The board reserves the right to contact the employer and the person providing tutelage on the project for information about the project experience presented to the applicant.

**4.1(5) References.** References are required for any applicant that must meet an experience requirement prior to taking an examination.

a. An applicant for the Principles and Practice of Engineering examination shall submit five references on forms provided by the board.

(1) At least three of the five references shall be from licensed professional engineers.

(2) If the applicant has had more than one supervisor, at least two of the references shall be from a supervisor of the applicant.

(3) If an applicant has had professional experience under more than one employer, the applicant shall provide references from individuals with knowledge of the work performed under a minimum of two employers.

(4) The board reserves the right to contact employers for information about the applicant's professional experience and competence or to request additional references.

b. An applicant for the Fundamentals of Engineering examination whose engineering degree is not from an ABET/EAC or CEAB accredited engineering program must provide a reference from a supervisor on a form provided by the board.

**4.1(6) Education and experience requirements.** The board will require the minimum number of years set forth on the following chart before an applicant will be permitted to take either the Fundamentals of Engineering or the Principles and Practice of Engineering examination. Column 1 indicates the years of practical experience required prior to the Fundamentals of Engineering examination in addition to the completion of the required educational level. To determine the total years of practical experience required prior to taking the Principles and Practice of Engineering examination, column 2 is added to column 1.

EXPERIENCE REQUIREMENTS FOR EXAMINATION APPLICANTS		
	1	2*
If the applicant's educational level is:	The applicant must have the following additional years of experience prior to taking the Fundamentals of Engineering examination:	The applicant must have the following years of experience after receipt of the qualifying degree and prior to taking the Principles and Practice of Engineering examination:
A 4-year bachelor's degree in an accredited engineering program	0	4
A 4-year bachelor's degree in mathematics or physical sciences plus a master's degree* in engineering	0	4

EXPERIENCE REQUIREMENTS FOR EXAMINATION APPLICANTS		
	1	2*
If the applicant's educational level is:	The applicant must have the following additional years of experience prior to taking the Fundamentals of Engineering examination:	The applicant must have the following years of experience after receipt of the qualifying degree and prior to taking the Principles and Practice of Engineering examination:
A 4-year bachelor's degree in technology or architecture plus a master's degree* in engineering	0	4
A 4-year bachelor's degree in engineering from a nonaccredited engineering program	1	4
A 4-year bachelor's degree in engineering from a nonaccredited engineering program plus a master's degree* in engineering	0	4

\*For purposes of this subrule, an applicant's master's degree in engineering must be from an institution in the United States of America with an accredited bachelor's degree in the same curriculum, and the master's degree candidate must be required to fulfill the requirements for the bachelor's degree in the same area of specialization.

**4.1(7) Practical experience requirements.** Practical engineering experience is required prior to licensing. The purpose of this requirement is to ensure that the applicant has acquired the professional judgment, capacity and competence to design engineering works, structures, and systems. The following criteria will be considered by the board in determining whether an applicant's experience satisfies the statutory requirements.

*a. Quality.* Experience shall be of such quality as to demonstrate that the applicant has developed technical skill and initiative in the correct application of engineering principles. Such experience should demonstrate the capacity to review the applications of these principles by others and to assume responsibility for engineering work of professional character. To be readily acceptable, an applicant's experience shall be under the tutelage of a professional engineer. However, an applicant who is an engineer intern and whose tutelage or portion of tutelage has not been under a licensed professional engineer must submit a cover letter to the board requesting consideration of such experience along with the application. The applicant shall also submit a letter of reference from the applicant's supervisor(s). The letter of reference shall assess the applicant's performance, development, integrity, and ability to assume responsible charge and shall contain a description of the supervisor's background in education and experience and the nature of the tutelage provided to the applicant. The board may require the applicant to submit additional letters of reference or other evidence of suitable tutelage. The board may require an oral interview with the applicant or other evidence to verify the applicant's knowledge and experience in the principles and practice of engineering. The board may conduct interviews with persons providing tutelage to the applicant.

*b. Scope.* Experience shall be of sufficient breadth and scope to ensure that the applicant has attained reasonably well-rounded professional competence in a basic engineering field, rather than highly specialized skill in a very narrow and limited field.

*c. Progression.* The record of experience shall indicate successive and continued progress from initial, subprofessional work of simpler character to recent, professional work of greater complexity and a higher degree of responsibility, as well as continued interest and effort on the part of the applicant toward further professional development and advancement. In evaluating this progression, the board will consider both subprofessional and professional activity as reported by the candidate. However, only work experience obtained after receipt of the qualifying degree by the candidate will be considered, except as described in 193C—paragraph 4.1(7) "d." Subprofessional work includes the time spent in drafting, as an engineering technician or engineering assistant or inspector, or in similar work under direct supervision, including work where the personal responsibility and technical knowledge required are small, that is, minor positions in which the responsibility is slight and the individual performance of

a task that has been set and supervised by a supervisor is all that is required. Professional work includes the time during which the applicant was occupied in engineering work of higher grade and responsibility than that defined above as subprofessional work. Time spent in teaching engineering subjects in a college or university at the level of assistant professor or higher may be listed as professional work.

*d. Special work experience.* Work experience prior to graduation from college may be accepted toward satisfaction of professional experience requirements only as follows: Cooperative work programs administered by engineering colleges and verified on the transcript and internships administered by engineering colleges with a verifying reference from the internship supervisor will be considered as half-time credit, with a maximum allowance of 6 months (12 months of cooperative work experience or internship) applicable toward the satisfaction of professional experience requirements. An applicant's advanced education, military experience, or both will be reviewed in order to determine if they are applicable toward the statutory requirements for experience.

*e. Advanced education.* An applicant who has earned a Master of Science degree that includes research experience, in addition to writing an associated thesis, from an institution in the United States of America with an accredited Bachelor of Science engineering degree program in the same discipline and has fulfilled the requirements for a Bachelor of Science degree may be granted a maximum of one-half year's experience credit. An applicant who has earned a Doctor of Philosophy degree from an institution in the United States of America with an accredited Bachelor of Science engineering degree program in the same discipline may be granted a maximum of one year's experience credit in addition to the one-half year for the master's degree.

*f. Teaching experience.* Teaching of engineering subjects at the level of assistant professor or higher in an accredited engineering program may be considered as experience, provided the applicant's immediate supervisor is a licensed professional engineer in the jurisdiction in which the college or university is located. If the applicant's immediate supervisor is not a licensed professional engineer, a program of mentoring or peer review by a licensed professional engineer acceptable to the board must be demonstrated. Applicants using teaching or research as experience must have a minimum of four years of acceptable experience in research, industry, or consulting. The board shall consider the complexity of the project(s) presented, the degree of responsibility of the applicant within the project, and other factors the board deems relevant. Academic experience must demonstrate increasing levels of responsibility for the conduct and management of projects involving engineering research, development or application. The board reserves the right to contact employers for information about the applicant's professional experience and competence.

*g. Joint applications.* Applicants requesting licensure both as a professional engineer and a land surveyor must submit a history of professional experience in both fields. Such histories will be considered separately on a case-by-case basis. The board does not grant full credit for concurrent experience in both professions.

**4.1(8)** Required examinations. All examinations are uniform examinations prepared and graded by the National Council of Examiners for Engineering and Surveying (NCEES). The board may negotiate an agreement with an examination service to administer the examinations to applicants approved by the board, in which case applicants shall pay examination fees directly to the service.

*a. Fundamentals of Engineering examination (fundamentals examination).* The Fundamentals of Engineering examination is a written, eight-hour examination covering general engineering principles and other subjects commonly taught in accredited engineering programs.

*b. Principles and Practice of Engineering examination (professional examination).* The Principles and Practice of Engineering examination is a written, eight-hour examination designed to determine proficiency and qualification to engage in the practice of professional engineering only in a specific branch. A separate examination shall be required for each branch in which licensure is granted.

*c. Passing scores.* The board reviews test results for each examination and determines what level shall constitute a minimum passing score for that examination. In making its determination, the board generally is guided by the passing score recommended by the NCEES. The board fixes the passing score for each examination at a level which it concludes is a reasonable indication of minimally acceptable professional competence.

*d. Reexamination.* An applicant who fails an examination may request reexamination at the next examination period without reapplication to the board. If the applicant intends to retake the examination, the applicant must notify the examination service selected by the board to administer the examinations prior to the application due date for the examination.

*e. Failure to appear.* An applicant who fails to appear for an examination may sit for the examination the next time it is offered without reapplication provided the application will not be more than one year old at the time of the application due date for the examination and the applicant notifies the examination service selected by the board to administer the examinations prior to the application due date for the examination.

*f. Materials permitted in examination room.* For security reasons, applicants shall comply with requirements regarding materials permitted in the examination room as issued by the National Council of Examiners for Engineering and Surveying and provided to candidates prior to the examination.

*g. Release of examination results.* Results of any examination shall only be reported as pass or fail except that the candidate who fails an examination may be provided with the candidate's converted score and a diagnostic report indicating areas of weakness, as available.

**4.1(9) Examination subversion.** Any individual who subverts or attempts to subvert the examination process may, at the discretion of the board, have the individual's examination scores declared invalid for the purpose of licensure in Iowa, be barred from engineering licensure and examinations in Iowa, or be subject to the imposition of other sanctions the board deems appropriate.

*a.* Conduct that subverts or attempts to subvert the examination process includes, but is not limited to:

(1) Conduct that violates the security of the examination materials, such as removing from the examination room any of the examination materials; reproducing or reconstructing any portion of the licensing examination; aiding by any means in the reproduction or reconstruction of any portion of the licensing examination; or selling, distributing, buying, receiving, or having unauthorized possession of any portion of a future, current, or previously administered licensing examination.

(2) Conduct that violates the standards of test administration, such as communicating with any other examination candidate during the administration of the licensing examination; communicating with others outside of the examination site during the administration of the examination; copying answers from another candidate or permitting one's answers to be copied by another candidate during the administration of the examination; or having in one's possession during the administration of the licensing examination any device or materials that might compromise the security of the examination or examination process, such as calculating and computing devices not on the list of devices approved by the examination provider or provided by the examination provider.

(3) Conduct that violates the examination process, such as falsifying or misrepresenting educational credentials or other information required for admission to the licensing examination or impersonating an examination candidate or having an impersonator take the licensing examination on one's behalf.

*b.* Any examination candidate who wishes to appeal a decision of the board under this subrule may request a contested case hearing. The request for hearing shall be in writing, shall briefly describe the basis for the appeal, and shall be filed in the board's office within 30 days of the date of the board decision that is being appealed. Any hearing requested under this subrule shall be governed by the rules applicable to contested case hearings under 193—Chapter 7.

**193C—4.2(542B) Requirements for licensure by comity.** A person holding a certificate of licensure to engage in the practice of engineering issued by a proper authority of a jurisdiction or possession of the United States, the District of Columbia, or any foreign country, based on requirements that do not conflict with the provisions of Iowa Code section 542B.14 and who has met standards determined by the board to be substantially equivalent to those required of applicants for initial licensure in this state may, upon application, be licensed without further examination. When determining whether the licensing standards satisfied by a comity applicant are substantially equivalent to those required in Iowa, the board considers each of the four licensing prerequisites in Iowa Code section 542B.14(1) individually. The licensing standards satisfied by the comity applicant must accordingly be equal or superior to those

required in Iowa for education, fundamentals examination, experience, and professional examination. Unless expressly stated in this chapter, the board will not consider an applicant's superior satisfaction of one licensing prerequisite, such as a higher level of education than is required in Iowa, as resolving an applicant's lack of compliance with another prerequisite, such as professional examination. Comity applicants are governed by the same standards as are required of applicants for initial licensure in Iowa.

**4.2(1) *References.*** An applicant for licensure by comity shall submit three references on forms provided by the board, at least two of which shall be from licensed professional engineers. The board reserves the right to contact employers for information about the applicant's professional experience and competence.

**4.2(2) *Basis for evaluation of applications.*** Applications for licensure by comity will be evaluated on the following basis:

*a.* The applicant's record of education, references, practical experience, and successful completion of approved examinations will be reviewed to determine if it currently satisfies the substantive requirements of Iowa Code section 542B.14. In reviewing the education, references, and practical experience of comity applicants, the board will use the same criteria used by the board to determine the eligibility of a candidate for the Principles and Practice of Engineering examination; or

*b.* The applicant's licensure in a jurisdiction other than Iowa will be reviewed to determine if it was granted only after satisfaction of requirements substantially equivalent to those that are required of applicants for initial licensure in Iowa by Iowa Code section 542B.14.

**4.2(3) *Evaluation of comity application process.***

*a.* First, the applicant for licensure by comity from a jurisdiction other than Iowa must meet or exceed the education requirements set forth in Iowa Code section 542B.14. In addition, if the applicant did not graduate from an Accreditation Board of Engineering and Technology (ABET)/Engineering Accreditation Commission (EAC) or Canadian Engineering Accreditation Board (CEAB) approved curriculum, the applicant must have completed a year of practical experience satisfactory to the board. This year of experience must be in addition to the four years of practical experience in engineering work as required in paragraph 4.2(3) "*d.*"

*b.* Second, the applicant must have successfully completed the Fundamentals of Engineering examination.

(1) An applicant who graduated from a satisfactory engineering program and who has 25 years or more of work experience satisfactory to the board shall not be required to take the Fundamentals of Engineering examination.

(2) An applicant who has earned a Doctor of Philosophy degree from an institution in the United States of America with an accredited Bachelor of Science engineering degree program in the same discipline, or a similar doctoral degree in a discipline approved by the board, shall not be required to take the Fundamentals of Engineering examination.

*c.* Third, the applicant must have successfully completed the Principles and Practice of Engineering examination.

*d.* Fourth, the applicant must have a record of four years or more of practical experience in engineering work which is of a character satisfactory to the board. This experience must have been obtained after the receipt of the appropriate education and must meet the requirements for practical experience found at paragraph 4.1(7) "*a.*"

*e.* While the board will consider evidence presented by a comity applicant on non-NCEES examinations successfully completed in a foreign country, the non-NCEES examination will be compared with the appropriate NCEES examination. A non-NCEES professional examination, for instance, must be designed to determine whether a candidate is minimally competent to practice professional engineering in a specific branch of engineering, such as civil, structural, electrical, or mechanical engineering. The examination must be written, objectively graded, verifiable, and developed and validated in accordance with the testing standards of the American Psychological Association or equivalent testing standards. Free-form essays and oral interviews, while valuable for certain purposes, are not equal or superior to NCEES examinations for reasons including the subjective nature of such procedures, lack of verifiable grading standards, and heightened risk of inconsistent treatment.

**4.2(4) Education and experience requirements.**

a. For applicants who were originally licensed in a jurisdiction other than Iowa prior to July 1, 1988, the board will employ the following chart to determine if the applicant's licensure was granted after satisfaction of requirements substantially equivalent to those which were required by Iowa Code section 542B.14 at the time of the applicant's original licensure. Column 1 indicates the years of practical experience that were required prior to the Fundamentals of Engineering examination in addition to the completion of the required educational level. To determine the total years of practical experience that were required prior to taking the Principles and Practice of Engineering examination, column 2 is added to column 1.

EXPERIENCE REQUIREMENTS FOR COMITY APPLICANTS Who were licensed prior to July 1, 1988		
If the applicant's educational level was:	The applicant must have had the following additional years of experience prior to taking the Fundamentals of Engineering examination:	The applicant must have had the following years of experience after receipt of the qualifying degree and prior to taking the Principles and Practice of Engineering examination:
No post-high school education	8	4
Postsecondary study in mathematics or physical sciences		
One year	7	4
Two years	6	4
Three years	5	4
Four years	3	4
Four-year BS degree in mathematics or physical sciences plus master's degree in engineering	0	4
Postsecondary study in engineering technology programs and architecture		
One year	7	4
Two years	5.5	4
Three years	4	4
Four-year degree in a nonaccredited engineering technology program or BA in architecture	2.5	4
Four-year degree in an accredited engineering technology program	2	4
Bachelor of architecture, four years or more	2	4
Four-year degree in engineering technology or architecture plus master's degree in engineering	0	4
Postsecondary study in a nonaccredited engineering program		
One year	7	4
Two years	5	4
Three years	3	4
Four-year BS degree	1	4
Four-year degree in a nonaccredited engineering program plus master's degree in engineering	0	4
Postsecondary study in an accredited engineering program		
Two years	6	4
Three years	3	4
Four-year degree in an accredited engineering program	0	4

b. For applicants who were originally licensed in another jurisdiction and who meet the requirements of Iowa Code section 542B.14(1)(a)(3), the board will employ the following chart to

determine if the applicant's licensure was granted after satisfaction of requirements substantially equivalent to those which were required by Iowa Code section 542B.14 at the time of the applicant's original licensure. Column 1 indicates the years of practical experience that were required prior to the Fundamentals of Engineering examination in addition to the completion of the required educational level. To determine the total years of practical experience that were required prior to taking the Principles and Practice of Engineering examination, column 2 is added to column 1.

EXPERIENCE REQUIREMENTS FOR COMITY APPLICANTS Who meet the requirements of Iowa Code section 542B.14(1)(a)(3)		
If the applicant's educational level was:	The applicant must have had the following additional years of experience prior to taking the Fundamentals of Engineering examination:	The applicant must have had the following years of experience after receipt of the qualifying degree and prior to taking the Principles and Practice of Engineering examination:
College or junior college (mathematics or physical sciences)		
Two years	6	4
Three years	5	4
Four-year BS degree	3	4
Four-year BS degree plus master's degree in engineering	0	4
All engineering technology programs and architecture		
Two years	6	4
Three years	5	4
Four-year degree, nonaccredited technology or BA in architecture	3	4
Four-year degree, accredited technology	2	4
Four-year degree or more, bachelor of architecture	2	4
Four-year BS degree, technology or architecture plus master's degree in engineering	0	4
Engineering program, nonaccredited		
Two years	6	4
Three years	3	4
Four-year BS degree	1	4
Four-year BS degree plus master's degree in engineering	0	4
Engineering program, accredited		
Two years	6	4
Three years	3	4
Four-year BS degree	0	4

c. For all other applicants who were originally licensed in a jurisdiction other than Iowa on or after July 1, 1988, the board will employ the chart found at subrule 4.1(6) to determine if the applicant's licensure was granted after satisfaction of requirements substantially equivalent to those which are required by Iowa Code section 542B.14.

d. For purposes of this subrule, an applicant's master's degree in engineering must be from an institution in the United States of America with an accredited bachelor's degree in the same curriculum, and the master's degree candidate must be required to fulfill the requirements for the bachelor's degree in the same area of specialization.

**193C—4.3(542B) Requirements for a licensee requesting additional examination.** A person holding an active certificate of licensure to engage in the practice of engineering issued by the state of Iowa may, upon written request and payment of the application and examination fees, take additional examinations in other branches of engineering without submitting a formal application to the board as described for initial or comity licensure.

These rules are intended to implement Iowa Code sections 542B.2, 542B.13, 542B.14, 542B.15, 542B.17 and 542B.20.

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