ENGINEERING LICENSURE

From Point A to P.E.

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NCEES
advancing licensure for engineers and surveyors

DISCLAIMER

Opinions expressed today are my own
& do not reflect the opinion of MA **Division of Occupational Licensure** or the **Board of Registration of Professional Engineers and Land Surveyors**

History of the Licensure in The USA

1907 ☐Wyoming passes the first engineering registration law.

1922 ☐ The American Association of Engineers (which later became the National Society of Professional Engineers) put forth a platform for engineering that included the "passage of an engineers registration law in every state and the enforcement of existing registration laws."

1934 ☐ The National Society of Professional Engineers is formed, with the membership requirement of being a professional, licensed engineer. At the time, only 28 states had engineering registration laws enacted.

1940 ☐ Between 1935 and 1940, 17 additional states adopted engineering registration laws, partly through the efforts of NSPE members.

1947 ☐ Montana is the last state to enact engineering licensure laws.

Why do we License
To Protect the Public

The **Great Molasses Flood**, also known as the **Boston Molasses Disaster**, was a disaster that occurred on Wednesday, January 15, 1919, in the North End of Boston.

A large storage tank filled with 2.3 million gallons of molasses, weighing approximately 13,000 tons burst, and the resultant wave of molasses rushed through the streets at an estimated 35 miles per hour, killing 21 people and injuring 150. It's reported that during hot days in the Summer you still smell molasses.

Understanding the Terms

FE = Fundamental of Engineering

PE = Principals and Practices (16)

SE = Structural Engineer

PLS = Professional Land Surveyor

Licensure: a universal standard

- "Engineering licensure is crucial for career advancement and top pay."
  – *U.S. News & World Report*
- Think about other professions.
  – Why do we license physicians?
  – Accountants?
  – Attorneys?

Value of Licensure

- What do firms look for when hiring?
  - Degrees, work references, technical skills
- FE and PE!

250 CMR 3.0 THE REGISTRATION PROCESS

3.01: Registration Requirements

(1) Applicants for registration are charged with having knowledge of M.G.L. c. 112, § 81D through § 81T and 250 CMR.

General Law - Part I, Title XVI, Chapter 112, Section 81D (malegislature.gov)

(6) Before submitting an application for registration, the applicant must obtain the Work Experience and education required for a given Application Classification. Work Experience obtained after the date the application was submitted is not included in determination of experience.

(7) Once the Board has reviewed the applicant's education, Work Experience, character and experience references, college transcripts and documentation, the Board may schedule the engineering applicant for an interview; and the Board shall schedule all land surveying applicants for the mandatory oral exam. Once the Board has determined that all applicable statutory requirements have been met, the applicant will be scheduled to sit for the applicable written examinations.

250 CMR 3.0 THE REGISTRATION PROCESS

3.02: Application Form

(1) An application for registration must be submitted using only current Board-approved forms obtained from the Board.

3.03: Application Review and Evaluation

M.G.L. c. 112 obligates the Board to review and consider an applicant's education, performance on required examinations, relevant Work Experience, and references. The Board cannot process applications if an applicant is unable to submit sufficient supporting Evidence related to the foregoing.

(1) Each application must be reviewed and approved by at least two members of the Board. A denial of an application requires a majority vote of the Board.

250 CMR 3.0 THE REGISTRATION PROCESS

Candidates may apply based on the following criteria:

Classification A: Registered in another state/jurisdiction and in compliance with the requirements of one of the listed classifications. i.e. classification (b) through (e).

OR

Classification B:

(1) An ABET accredited Bachelor of Science degree in engineering or one approved by the Massachusetts Legislature together with a Master's Degree in Engineering by a school in the US whose basic engineering program is ABET Accredited and having three years of acceptable experience.

(2) An ABET accredited Bachelor of Science Degree in engineering and having four years of acceptable engineering experience.

(3) A Bachelor of Science degree from an institution authorized to grant such degree by the Massachusetts Legislature and having four years of acceptable engineering experience.

(4) A non-accredited curriculum with a Bachelor of Science degree in engineering or a related engineering science such as a technology degree, foreign degree, physics degree, chemistry degree, etc. together with an ABET accredited advanced engineering degree and having four years of acceptable engineering experience.

(5) A foreign degree in engineering of four years or more that has been determined to be equivalent to an ABET accredited degree and having four years of acceptable engineering experience.

In addition to the above, each must have passed the Fundamentals of Engineering examination.

The P.E. license

- A professional engineer has
  - The education, experience, and technical knowledge to lead
  - An obligation to safeguard the public
- It works both ways.
  - You stand out in a crowd as a P.E.
    - You are trusted to protect the health, safety and welfare of the public.

The benefits of a P.E.

- It opens career doors. Professional engineers can:
  - –Own a firm
  - –Consult
  - –Sign/seal a design
  - –Bid for public money
  - –Advertise your services
- In a stack of resumes, yours stands out.
- You belong to a licensed profession.
- You serve the public–not just your employer.
- You typically earn more than peers without a P.E.

Application Process

- Professional Credential Services (PCS)
  - PE Application is found here (school, experience, references & supporting documentation)

Choose A Study Course

- ☐ Engineering Education & Training
- ☐ School of PE
- ☐ PPI 2 Pass
- ☐ ASCE (American Society of Civil Engineers)
- ☐ Prep course material is up to date with new format

Exam Tips

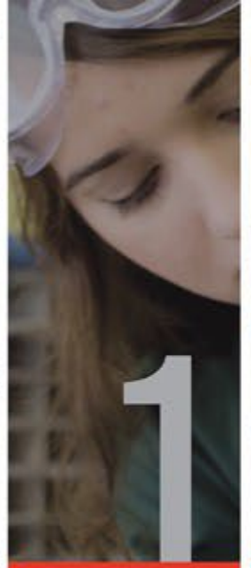
- Download the Handbook from NCEES
  - No longer allowed to bring references on exam day
- New PE Civil Exam format is based on the specific discipline
  - Review exam outline on NCEES

FEE$

- Registration ~ $164
- Study Course ~ $1000 - $3000
- PE Exam ~ $400
- License ~ $150

3 steps

Getting from point A to P.E.



1 Education

- Generally, engineering licensing boards require a bachelor's degree from an EAC/ABET accredited program.
  - Check requirements of your state licensing board.
  - The Engineering Accreditation Commission (EAC) of ABET accredits college engineering programs.

1

2 Experience

3

- ☐ Demonstrate acceptable, progressive and verifiable work experience in the industry.
- ☐ Typically four years of experience

- ☐ Pass the FE exam
- ☐ Pass the PE exam in your engineering discipline.

THE FE EXAM


"I would suggest taking the Fundamentals of Engineering exam anywhere from six months before graduation to six months after graduating. This way, the undergraduate college material is still fresh in your mind."
Clyde Lettsome, Ph.D., P.E.
Software Engineer and Consultant

FE Exam format and content

- 7 freestanding, discipline-specific exams
  - Chemical, Civil, Computer and Electrical, Environmental, Industrial and Systems, Mechanical, Other Disciplines
- Exam specifications (what's on the exam)
  - Available at ncees.org/exams
- *FE Reference Handbook*
- 110 exam questions
- Standard and alternative item types (AITs)
  - Multiple choice (one correct option), multiple correct options, point and click, drag and drop, fill in the blank

FE Exam administration

- Approved Pearson VUE test centers
- Year-round testing
- 6-hour exam appointment, which includes
  - Nondisclosure agreement (2 minutes)
  - Tutorial (8 minutes)
  - Exam (5 hours and 20 minutes)
  - Scheduled break (25 minutes)

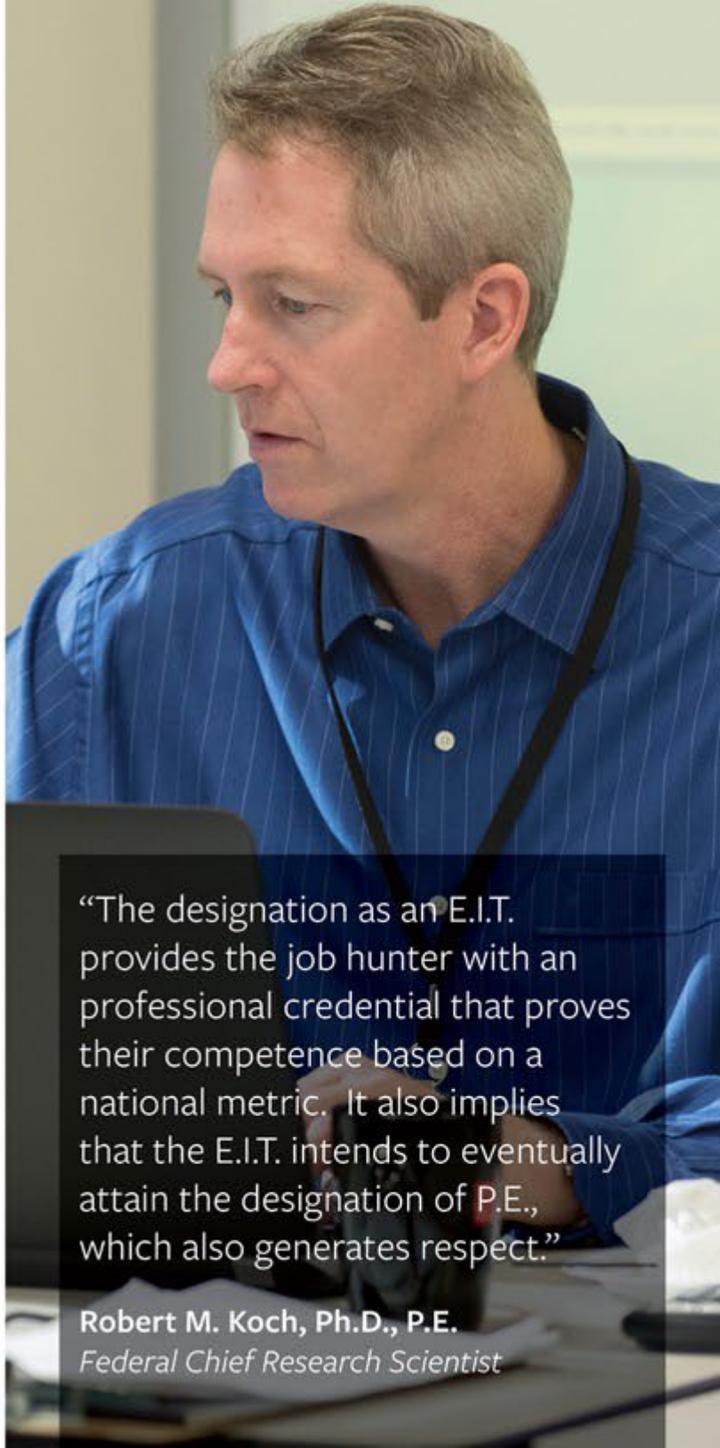
FE Exam FAQs

- Does NCEES offer exam preparation materials?
  - NCEES Practice Exams
- What's the exam day like?
  - Youtube.com/NCEESmedia
- Other frequently asked questions:

https://ncees.org/engineering/fe/

When should I take the FE?

THE PE EXAM


"The designation as an E.I.T. provides the job hunter with an professional credential that proves their competence based on a national metric. It also implies that the E.I.T. intends to eventually attain the designation of P.E., which also generates respect."
Robert M. Koch, Ph.D., P.E.
Federal Chief Research Scientist

The PE Exam

- Reflects real-world practice
- Tests for a level of minimum competency
- Specifications and PE practice exams available at ncees.org

PE Exam disciplines

- ☐ Agricultural and Biological
- ☐ Architectural
- ☐ Chemical
- ☐ Civil
- ☐ Control Systems
- ☐ Electrical and Computer
- ☐ Environmental
- ☐ Fire Protection
- ☐ Industrial and Systems
- ☐ Mechanical
- ☐ Metallurgical and Materials
- ☐ Mining and Mineral Processing
- ☐ Naval Architecture and Marine
- ☐ Nuclear
- ☐ Petroleum
- ☐ Structural

PE Exam Administration

- Administered at approved Pearson VUE test centers
- Year-round testing for large volume exams
- Once-per-year testing for small volume exams

LICENSURE

The next step is yours.

ncees.org

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