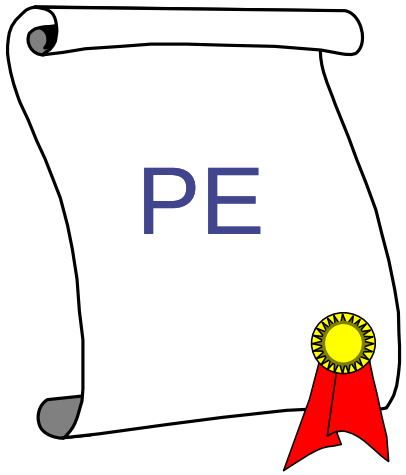
Professional Registration

- Who, why and how?



What is a licensed engineer?

The Professional Engineering license grants you the opportunity to perform engineering services for the public, take responsibility for your designs, reports, professional opinions, plans, etc., and allows you to affix your state-authorized engineering “seal” to your engineering work.

Who Should be Licensed?

- Persons performing engineering services for the public
- Persons supervising design and construction of public works
- Persons using the term “Engineer” or “Professional Engineer”
- Anyone who violates these parameters is subject to legal penalties

http://www.tbpe.state.tx.us/disciplinary_all.htm

Why Should I Be Licensed?

- Job requirements -- Only a licensed engineer may prepare, sign and seal, and submit engineering plans and drawings to a public authority for approval, or seal engineering work for public and private clients.
- Aids in promotion -- sets you apart from others. Employers look to licensure in evaluating the advancement potential of their employees.
- Prestige -- Licensed engineers achieve an enhanced status in the eyes of the public

What is a Licensed Engineer?

Under the Texas Engineering Practice Act, only duly licensed persons may legally perform, or offer to perform engineering services for the public.

Having an engineering license means more than just meeting a State's minimum requirements. It means you have accepted both the technical and the ethical obligations of the engineering profession.

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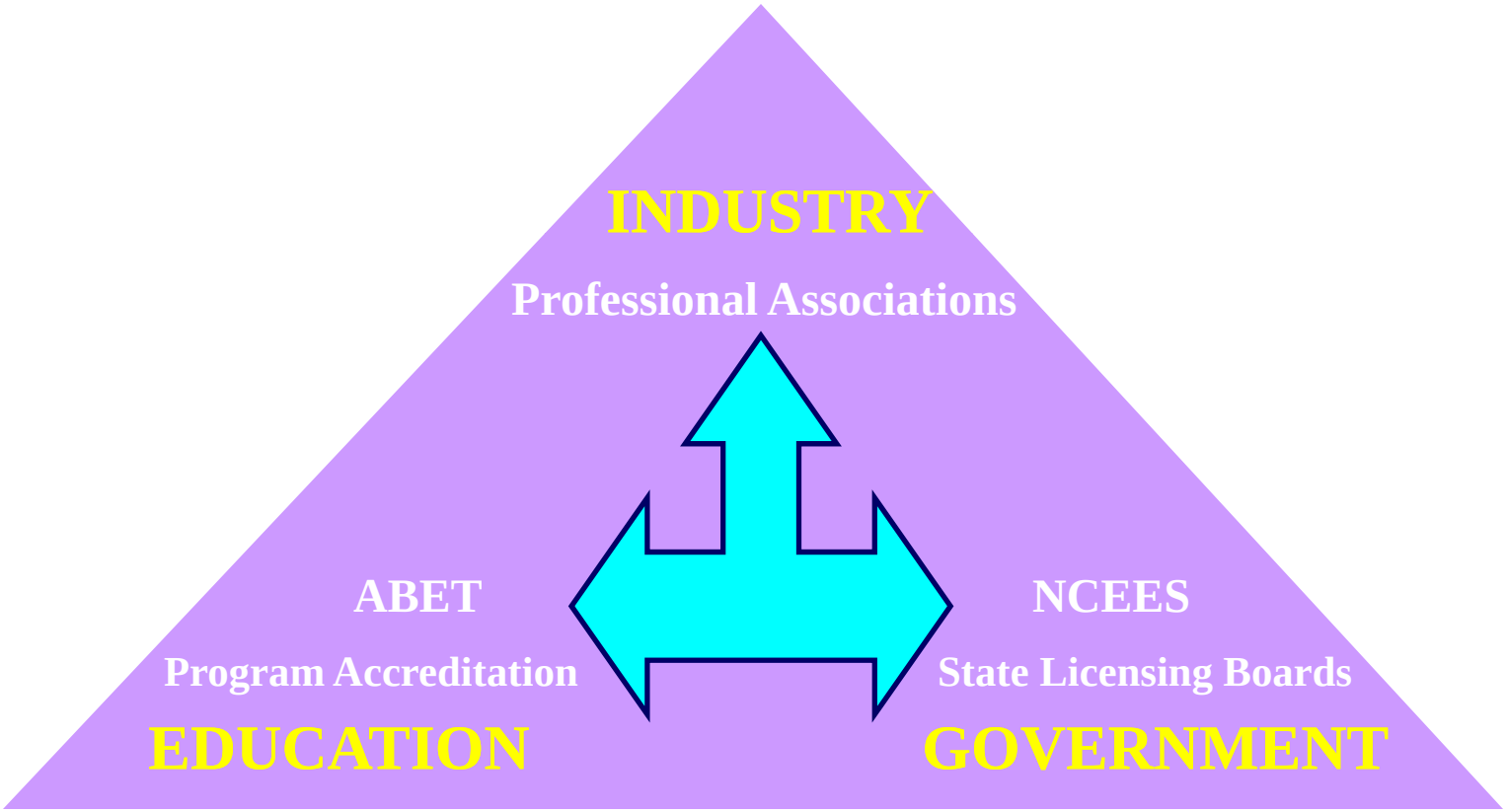
Licensing: the product of collaboration between Industry, Government & Education



ABET - Accreditation Board for Engineering and Technology
NCEES - National Council of Examiners for Engineering and Surveying

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Background and History

- School explosion, New London, Texas (1937)

  http://en.wikipedia.org/wiki/New_London_School_explosion

- Engineering Registration Act (May 28, 1937)
- Texas Engineering Practice Act (August 30,1965)

  http://www.tbpe.state.tx.us/downloads/law_rules306.pdf

  Modified in 2006

Engineering Practice Act

Engineers shall :

- Protect the public
- Be objective and truthful
- Be competent
- Maintain the confidentiality of clients
- Act in a responsible manner

Engineering Practice Act

Establishes:

- That the privilege of practicing engineering be entrusted only to those persons duly licensed
- Ethical guidelines and rules of conduct
- Texas Board of Professional Engineers

State Board of Professional Engineers

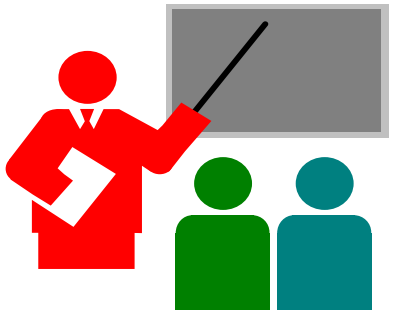
- Authorized to license those individuals qualified to practice engineering
- Regulates the practice of engineering in Texas
- Makes and enforces rules dealing with licensing, compliance and enforcement, and standards of conduct and ethics

Licensing Board

- Nine members appointed by Governor
- Six licensed professional engineers
- Three from the general public
- Staggered six year terms
- Currently meets four times per year
- Only compensation is per diem and transportation expenses

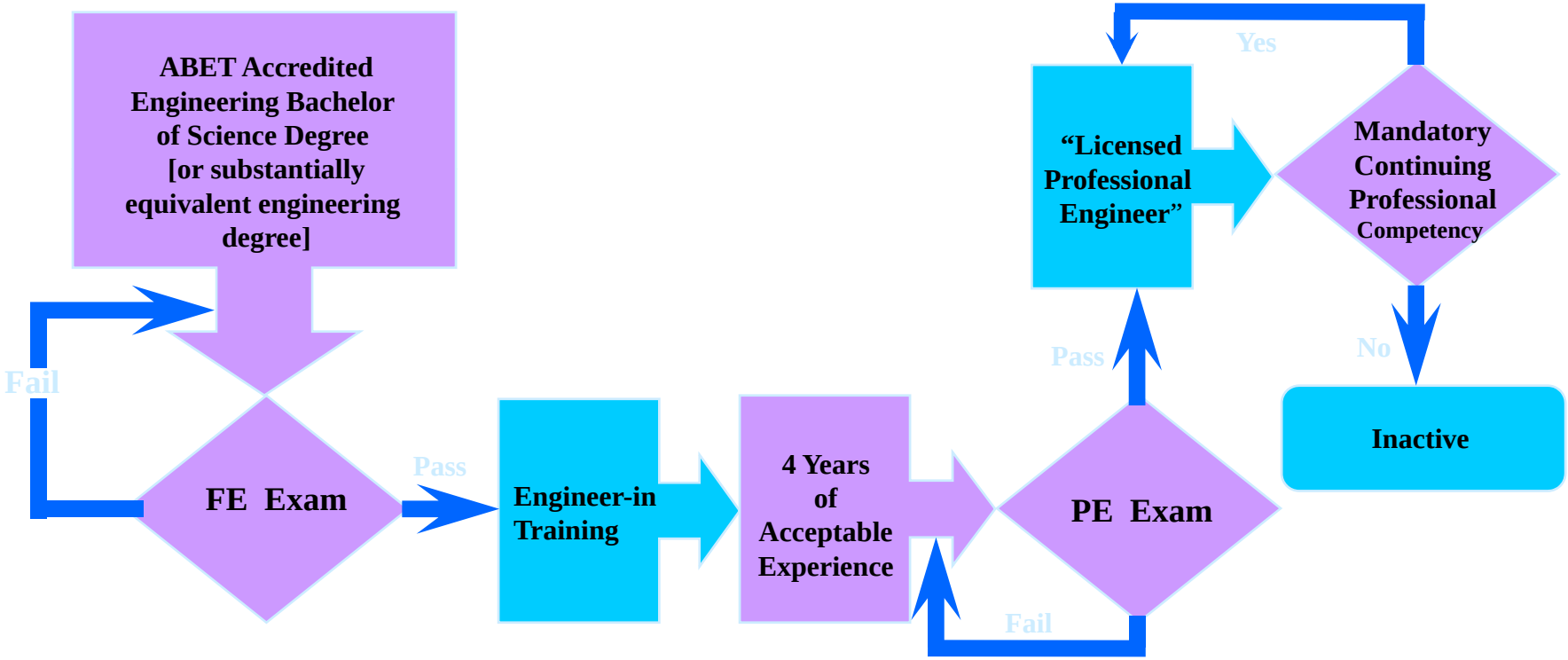
Requirements for Licensing

1. Education
2. Experience
3. Examinations



http://www.tbpe.state.tx.us/lic_basic.htm

Idealized Engineering Licensure Model



Note: The number of years of acceptable experience depend on the academic career and highest earned degree.

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Requirements

Type of Education	Experience Requirement	Examination Requirement	Reference Requirement
Accredited engineering degree (usually bachelor's)	4 years	Must pass FE, PE and ethics exams; may be eligible for waiver of FE exam with additional experience.	Three (3) references are required, all must be currently licensed P.E.'s. If requesting exam waiver, then five (5) references are required from currently licensed P.E.'s. The P.E. references not licensed in Texas must provide a copy of their current pocket card to verify licensure.
Accredited engineering degree and MS or PhD in engineering	3 years for MS or PhD only; 2 years for MS and PhD	Must pass FE, PE and ethics exams; may be eligible for waiver of FE exam with additional experience.	Three (3) references are required, all must be currently licensed P.E.'s. If requesting exam waiver, then five (5) references are required from currently licensed P.E.'s. The P.E. references not licensed in Texas must provide a copy of their current pocket card to verify licensure.

Key Elements of Experience

- Must demonstrate use of engineering knowledge, education, and judgment
- Must be progressive and of increasing standard of quality and responsibility
- Should be obtained while working under supervision of a licensed engineer

Acceptable Experience

- Design experience - selection and use of recognized engineering principles and methodologies
- Analysis experience - use of mathematical modeling and acceptable data collection techniques

References

- At least 3 references
- From current PE's with personal knowledge of the applicant's engineering experience
- Verify experience
- Also attest to character, reputation, and general suitability to hold a license

Examinations

- All applicants for licensure must pass three examinations
  - Fundamentals of Engineering (FE)
  - Principles and Practice of Engineering (PE)
  - Texas Ethics of Engineering

More information on registration

- http://engineeringregistration.tamu.edu
- http://www.tbpe.state.tx.us/lic.htm
- http://www.ncees.org/

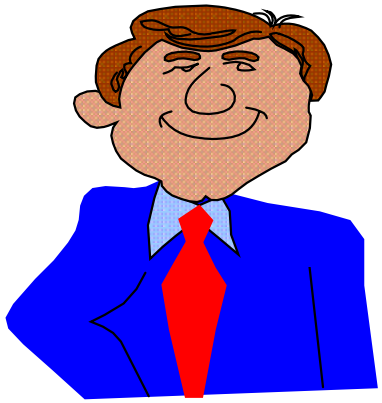
FE Exam (Fundamentals)

- Morning Session
  - Chemistry (9%)
  - Computers (6%)
  - Dynamics (7%)
  - Elect. Circuits (10%)
  - Engr. Econ. (4%)
  - Ethics (4%)
  - Fluid Mechanics (7%)
  - Materials Science (7%)
  - Mathematics (20%)
  - Mechanics (7%)
  - Statics (10%)
  - Thermodynamics (9%)

FE Exam (Fundamentals)

- Afternoon Session
  - Computers & Numerical Methods (10%)
  - Construction Management (5%)
  - Environmental Engineering (10%)
  - Hydraulics & Hydrologic Systems (10%)
  - Legal & Professional Aspects (5%)
  - Soil Mechanics & Foundations (10%)
  - Structural Analysis (10%)
  - Structural Design (10%)
  - Surveying (10%)
  - Transportation Facilities (10%)
  - Water Purification & Treatment (10%)

FE Exam at TAMU



- Offered in fall and spring
- Review sessions - math, science, engineering science, and civil engineering http://engineeringregistration.tamu.edu
- CVEN pass rate – 85% to 98%
- Exam coverage - http://www.ncees.org/exams/fundamentals/

Principles and Practice Exam

- Discipline Specific
  - Agricultural
  - Chemical
  - Civil
  - Control Systems
  - Electrical
  - Environmental
  - Fire Protection
  - Industrial
  - Manufacturing
  - Mechanical
  - Metallurgical
  - Mining/Mineral
  - Nuclear
  - Petroleum
  - Structural I&II

Principles and Practice Exam

- Morning Session (“Breadth”: same for all civil engineers) with forty multiple choice questions
- Afternoon Session (select “Depth” area) with forty multiple-choice questions

http://www.ncees.org/exams/professional/pe_civil_exams.php

Ethics of Engineering Exam

- Open book exam over the law and rules of the Texas Engineering Practice Act
- Assures applicant is familiar with state law and board rules
- Gives applicant experience in applying the law and board rules

Continuing Professional Competency

- Recognizes engineers for continuing their engineering training and education
- Must obtain 15 Professional Development Hours (Continuing Education) each year as a requirement for license renewal.
- Course/Activity - Any qualifying course or activity with the clear purpose and objective of maintaining, improving, or expanding the skills and knowledge relevant to the license holder's field of practice.
- One hour must deal with engineering ethics

http://engineeringregistration.tamu.edu/ContinuingEducation/index.htm

Why Should I Become Licensed?

➢ Technical Responsibility:

Your education and experience will prepare you for technical engineering work. Your license legally allows you to take personal responsibility for the engineering work that you perform for public and private clients.

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Why Should I Become Licensed?

➢ Public Recognition:

As a licensed engineer you achieve an enhanced status in the eyes of the public, which equates you with professionals licensed in other fields such as physicians, attorneys, etc.

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Why Should I Become Licensed?

➢ Private Practice:

If you want to pursue a career as a consulting engineer, or own your own engineering firm, or be in responsible charge of engineering work for the public, you must be licensed.

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Why Should I Become Licensed?

➢ Public Practice:

Many federal, state, and municipal agencies require that certain responsible engineering positions, particularly those considered “higher level,” be filled only by licensed engineers.

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Why Should I Become Licensed?

➢ Changing Workplace:

Today's workplace is rapidly changing: restructuring, downsizing, privatization, and outsourcing (where firms terminate employees and then hire them back as consultants) are common. You should be prepared to face a possible transition into a consulting or contract relationship with a former employer in the event of corporate outsourcing. Such a relationship requires an engineering license.

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Why Should I Become Licensed?

➢ Ethical Responsibility:

Licensure also aids you and the profession in the important area of ethics. While technical societies such as ASCE and others have codes of ethics for guidance, none have “legal” standing in the practice of engineering.

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Why Should I Become Licensed?

On the other hand, state licensing boards have standards of ethical conduct that are legally binding. The recognition and enforcement of these standards gives greater definition to our profession, and significantly enhances the image of licensed civil engineers.

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