The Legal Regulation of Engineering Practice is a State Function not a Federal Government Function.

Engineering registration in Texas
Only a licensed engineer may engage in the practice of engineering which is defined as “…the performance of or an offer or attempt to perform any public or private service or creative work, the adequate performance of which requires engineering education, training, and experience in applying special knowledge or judgment of the mathematical, physical, or engineering sciences to that service or creative work.”

Engineering registration in Texas
Industry argued for, and was granted an exemption from this requirement because
– Some industries (such as the power industry) are regulated in other ways, and
– The public is protected by product liability law and tort law.
– The result: The “industry exemption” allows unlicensed persons to perform engineering tasks for their employer.

Engineering registration in Texas
SB 277 (Spring 2003) broadened the industry exemption to
– Include certain software and hardware engineers
– Allow exempt engineers to use term “engineer” internally within the industry
– Use the term “engineer” if they have an accredited engineering degree and are working under the direction of a licensed professional engineer.

Engineering registration in Texas
New powers of the Board
• Defines the practice of engineering as it affects the public
• Can require manufactured products to be designed and sealed by a licensed professional engineer.
Engineering registration in Texas
New powers of the Board
- Render opinions on such topics as
  - Which products will require design by a licensed engineer?
  - Whether the engineering activities of a private entity affect the public?
  - Whether data collection and analysis intended to support an engineering analysis or to be included in engineering works constitute the practice of engineering?

- It is expected that these new powers will lead to the substantial broadening of the scope of professional practice and the accompanying requirement that more engineers be licensed.

Should an engineer be licensed from the health and safety standpoint, if
- A computer software engineer designs the software to control a nuclear power reactor?
- A mechanical engineer designs automobiles to be driven on our highways?
- An electrical engineer designs the electrical switchgear at a major water or wastewater treatment plant?
- A chemical engineer designs a chemical plant that discharges air pollutants into the atmosphere?
- A petroleum engineer designs oil separating and other processing equipment for leases located in a city like College Station/Bryan?
- An electrical engineer designs the control for a power grid that serves a large part of the country?

The engineering registration process
Step 1. The fundamentals of engineering exam
Step 2. Graduation from an accredited college of engineering
Step 3. A minimum of 4 years of responsible professional practice (graduate degrees in engineering count for one year each)
License application with references and an exam in your engineering field

The Jack of all trades is no more!
He or she has neither the time nor the money to be licensed.
In all things...
# The Fundamentals of Engineering (FE) Exam

- Covers basics of math, science and engineering sciences
- Is nationally accepted
- Best taken while knowledge is fresh
- Extensive study materials and review sessions
- Nominal cost – Given at TAMU
- 88 to 98% passing rate of TAMU students

# Acceptable engineering experience

- Engineering masters degree counts one year
- Engineering PhD degree counts one extra year
- The rest of the experience must be responsible professional experience under the direction of a licensed engineer
- Be careful that your initial jobs qualify

## Application and PE exam

- Generally initially apply in one state
- Provide licensed engineer references who have supervised or observed your work
- You will choose the engineering field in which you wish to be examined
- You must pass the PE exam (open book questions on the practice of engineering) in the chosen field

## The big question – Should you become a licensed professional engineer?

- Some advantages to being licensed
- Some practical considerations, and
- Some impediments
- And then we will suggest a line drawing evaluation you can make to assist you in making your choice

## Advantages of being a licensed Professional Engineer

1. Broadens the range of professional positions that are open to you throughout your lifetime
2. There is prestige inherent in achieving the professional engineer status and being able to use the P.E. designation behind your name

## Advantages of being a licensed Professional Engineer - P.E.

3. You have the P.E. designation for life, if:
   - You pay your annual or biannual fee
   - You gain modest continual education
   - You don’t screw up technically or ethically
4. It makes you eligible for promotion to higher level positions in academia, government, consulting organizations, the military and some industries
Advantages of being a licensed Professional Engineer

- 5. It makes you more marketable in the job market therefore warranting a higher salary to an employer who wants to keep you
- 6. It gives you the ability to hire young engineers under your supervision who need to work under a P.E. for them to qualify to be a P.E.

Advantages of being a licensed Professional Engineer

- 7. The ability to professionally sign and seal your own work
- 8. The ability to join the State and National professional engineering societies

Some practical considerations

- Graduates can expect to have several different employers during their careers – your P.E. license may be essential in a new job search.
- Can you afford to limit your career to only the jobs that do not require a P.E. license?
- You need to choose your initial job carefully to assure you are supervised by a licensed P.E. and will be getting responsible charge of work experience

Some practical considerations

- It is easier to get licensed early in your career
- Licensing laws are getting tougher and are expected to broaden in scope
- It may be a good idea to get “grandfathered” before the masters degree becomes the minimum education for the P.E.
- Industries can pay lower salaries to employees who are less employable to others – aerospace example

Impediments to the P.E. license

- The need to study for the FE exam
- The cost of the FE exam
- The need to plan ahead (missed deadlines)
- Accepting a job that will not yield acceptable experience

Should you become a licensed professional engineer?

Feature | Positive paradigm | Test case | Negative paradigm
--- | --- | --- | ---
(You decide!)
Higher level accreditations?

- Specialty certifications in law
- Specialty certifications in medicine
- Specialty certification is here now in some engineering fields and will be forthcoming in others
  - Diplomat of environmental engineering certification
  - Structural engineering certification

An example of specialty accreditations for engineers…

- The American Academy of Environmental Engineering was established by 11 engineering societies to establish a higher level certification body in this multidisciplinary field
- A P.E. with 4 additional years of experience in this field, after passing an exam in one or more of it’s specialty areas is awarded the title of Diplomat of Environmental Engineering and may use the designation DEE after his or her name and P.E.

Laws regulating practice of engineering

- Each state has its own law
- Each state issues its own PE licenses
- You must have a license in each state where you practice engineering
- Some states have reciprocal agreements with other states (but you still need the license)

SOURCES OF INFORMATION

- HANDOUT – SUBCHAPTER C--TEXAS ENGINEERING PRACTICE ACT Code of Ethics
- TODAY’S NOTES
- A TAMU resource: http://engineeringregistration.tamu.edu
- Texas Engineering Practice Act and Board Rules www.tbpe.state.tx.us/downloads.htm

Texas Engineering Practice Act

Subchapter C - Professional conduct and ethics

137.51 General Practice
137.53 Engineer standards of compliance with Professional Procurement Services Act
137.55 Engineers shall protect the public
137.57 Engineers shall be objective and truthful
137.59 Engineers’ actions shall be competent
137.61 Engineers shall maintain confidentiality of clients
137.63 Engineers’ responsibility to the profession
137.65 Action in another jurisdiction
137.55 Engineers shall protect the public
(a) Engineers shall be entrusted to protect the health, safety, property, and welfare of the public (any individuals, clients, business or public entities who might interact) in the practice of their profession.

(b) Engineers shall not perform any engineering function which is likely to result in the endangerment of lives, health, safety, property, or welfare of the public.

(c) Engineers shall notify involved parties or authorities of any engineering decisions or practices that might endanger the health, property, or welfare of the public.

(d) Engineers shall examine the environmental impact of their actions and projects, including the prudent use and conservation of resources and energy.

137.57 Engineers shall be objective and truthful
(a) issue statements only in an objective and truthful manner
(b) make no fraudulent, deceitful, or misleading statements
(c) disclose any possible conflict of interest
(d) definition of conflict of interest and how to disclose

137.59 Engineers actions shall be competent
Do not accept assignments you are not qualified to perform, practice only in your area of competence
In conformance with all...
• Standards
• Laws
• Codes
• Rules and regulations
…applicable to engineering practice
Standards

• Drinking water standards
• Standards for the examination of water and wastewater
• ASTM standards
• Highway design standards

Laws

• Conduct
• Contracts
• Safety
• Environment

Codes

• Building codes
• Boilers and pressure vessels
• AISC steel design codes
• ACI concrete design codes

Rules and regulations

• Rules and regulations promulgated by federal and state agencies to implement laws and local ordinances

Engineers actions shall be competent

Engineering opinions in court cases, depositions, and public forum shall conform to accepted scientific and engineering principles unless carefully justified

137.61 Engineers shall maintain confidentiality of clients

Reveal confidential information only when
• a fully informed client/employer consents
• required to by law or court order
• a threat to public health, safety, welfare otherwise exists
<table>
<thead>
<tr>
<th>Article</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>137.61</td>
<td>Engineers shall maintain confidentiality of clients. Don't use confidential information to disadvantage of the client or for advantage of third party. Exercise reasonable care to protect confidential information.</td>
</tr>
<tr>
<td>137.63</td>
<td>Engineers’ responsibility to the profession. Engage in professional and business activities in an honest and ethical manner. Satisfy all requirements of law, regulations. Prevent associates/employees from violating laws. Prevent your name from being used in fraudulent or deceitful practices.</td>
</tr>
<tr>
<td>137.65</td>
<td>Action in another jurisdiction. Don't practice engineering in other jurisdictions without license.</td>
</tr>
</tbody>
</table>

**Engineers’ responsibility to the profession**

- Be faithful agent to employer or client
- Act professionally and respectfully to all
- Do not aid or abet unlicensed persons to practice engineering
- Do not maliciously injure any reputation
- Do not retaliate against anyone giving unfavorable reference in good faith
- Do not give or offer any commission or favor to secure contracts
- Do not accept compensation from more than one party for same services
- Do not use false or misleading advertising to solicit work