



# Professional Licensure

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# Why become licensed as a professional engineer?

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- All states require persons offering engineering services to the public to be licensed engineers.
- Most states (36) require that engineers be licensed to present themselves as an expert witness.
- It demonstrates to the public that the engineer is a competent practitioner.
- It demonstrates commitment to the profession.
- It is a requirement for advancement in most engineering firms that offer services directly to the public.



# Expert witness example

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Our guy was stellar in terms of his knowledge, in fact, he even taught engineering courses but had never secured his license and was being used to counter the other side's engineer and architect. Notwithstanding our expert's superior knowledge of both the literature and scientific issues involved, the **lack of professional licenses** may well have reduced his credibility with the jury.

On cross-examination, counsel for the architectural/ engineering firm against us made plain to the jury that this **witness had no license, couldn't have practiced as an engineer for any other entity, and didn't know if he would have passed the licensing test.** The jury found against us on the engineering/architectural claim.



# Expert witness example

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Q. In the profession of engineering, there are special examinations that one can take in order to become a licensed professional. Isn't that correct?

A. Yes.

Q. And if you want to become a licensed engineer in the State of Ohio, you are required to take an examination certifying you as a specialist in your field, aren't you?

A. Well, there is such an examination but many engineers don't take it.

Q. Well, the fact is you haven't take it, have you sir?

A. That's correct.

Q. You could have taken the test if you wanted to?

A. Yes.

Q. But you would have no way of knowing whether you would pass it or not, isn't that right?

A. No, I haven't had the time to take it.

Q. 15 - 20 years in the practice and you haven't found the time to take it. Is that right, sir?

A. That's right.

Q. And as to the flooring and structure at issue in this case, if some other company wanted to construct the building and turned to you for advice, am I right, sir, that you're not allowed under the law of Ohio to certify those specifications. Are you?

A. That's correct.



# Exemptions to licensure laws?

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- engineers working in a manufacturing corporation,
- engineers working for a public utility, and
- engineers working in a corporation engaged in interstate commerce.



# Exemption example

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The Honorable Warren Chisum  
Chair, Committee on  
Environmental Regulation  
Texas House of Representatives  
P. O. BOX 2910  
Austin, Texas 78768-29 1 0

Opinion No. IC-0525

Re: Whether the Texas Engineering Practice Act permits in-house engineers to include their job titles on business cards, cover letters, and other correspondence (RQ-0495-JC)

Dear Representative Chisum:

You ask whether the Texas Engineering Practice Act permits in-house engineers who work for private corporations that do not offer engineering services to the public to include their job titles on business cards, cover letters, and other forms of correspondence. We conclude they may **not** do so.

....an employee, not licensed under the Act yet classified as an "engineer" in a private corporation, may **not** represent to the public that he or she is an engineer, ie., by using that title on business cards, stationery, and other forms of correspondence that are made available to the public. Unless an employee of a private firm is a licensed engineer, the employee may not use the title of "engineer" on business cards, stationery, and other forms of correspondence which would represent to the public that the employee is a licensed engineer.

From Attorney General, State of Texas



# Steps?

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B.S.  
Engineering Degree  
ABET

Pass FE Exam

4 yrs work  
As EIT

Pass  
P&P Exam

***Professional Engineer***



# ABET – objectives of accreditation

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1. Assure graduates from a program are adequately prepared to enter and continue the practice of engineering
2. Stimulate the improvement of engineering education
3. Encourage new and innovative approaches to engineering education and its assessment
4. Identify to the public...accredited programs



# Why is accreditation important?

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1. **Accreditation** helps **students** and their **parents** choose quality college programs.
2. **Accreditation** enables **employers** and **graduate schools** to recruit graduates they know are well-prepared.
3. **Accreditation** is used by registration, licensure and certification **boards** to screen applicants
4. **Accreditation** gives **colleges** and **universities** a structured mechanism to assess, evaluate and improve the quality of their program.

# ABET Criteria 3 – program outcomes



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- a. an ability to apply knowledge of mathematics, science, and engineering
- b. an ability to design and conduct experiments, as well as to analyze and interpret data
- c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- d. an ability to function on multi-disciplinary teams
- e. an ability to identify, formulate, and solve engineering problems
- f. an understanding of professional and ethical responsibility
- g. an ability to communicate effectively
- h. the broad education necessary to understand the impact of engineering solutions in a global economic, environmental, and societal context
- i. a recognition of the need for, and an ability to engage in life-long learning
- j. a knowledge of contemporary issues
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

# PROGRAM CRITERIA FOR PETROLEUM AND SIMILARLY NAMED ENGINEERING PROGRAMS

Submitted by the Society of Petroleum Engineers

These program criteria apply to engineering programs which include "petroleum", "natural gas", and similar modifiers in their titles.



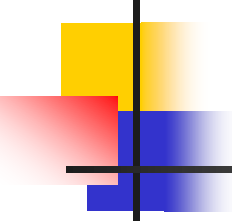
## 1. Curriculum

The program must demonstrate that graduates have the ability to apply:

- mathematics through differential equations, probability and statistics, fluid mechanics, strength of materials, and thermodynamics to petroleum engineering problems;

and competency in the:

1. design and analysis of well systems and procedures for drilling and completing wells;
2. characterization and evaluation of subsurface geological formations and their resources using geoscientific and engineering methods;
3. design and analysis of systems for producing, injecting, and handling fluids;
4. application of reservoir engineering principles and practices for optimizing resource development and management; and
5. use of project economics and resource valuation methods for design and decision making under conditions of risk and uncertainty.



# New Mexico Tech Petroleum Engineering Program objectives

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- To educate an individual to be a petroleum engineer who is competent in drilling and completions, production, and reservoir evaluation.
- To develop the graduate's ability to analyze open-ended problems and design solutions for petroleum engineering and related disciplines, understand the associated uncertainties and to effectively communicate their ideas to others.

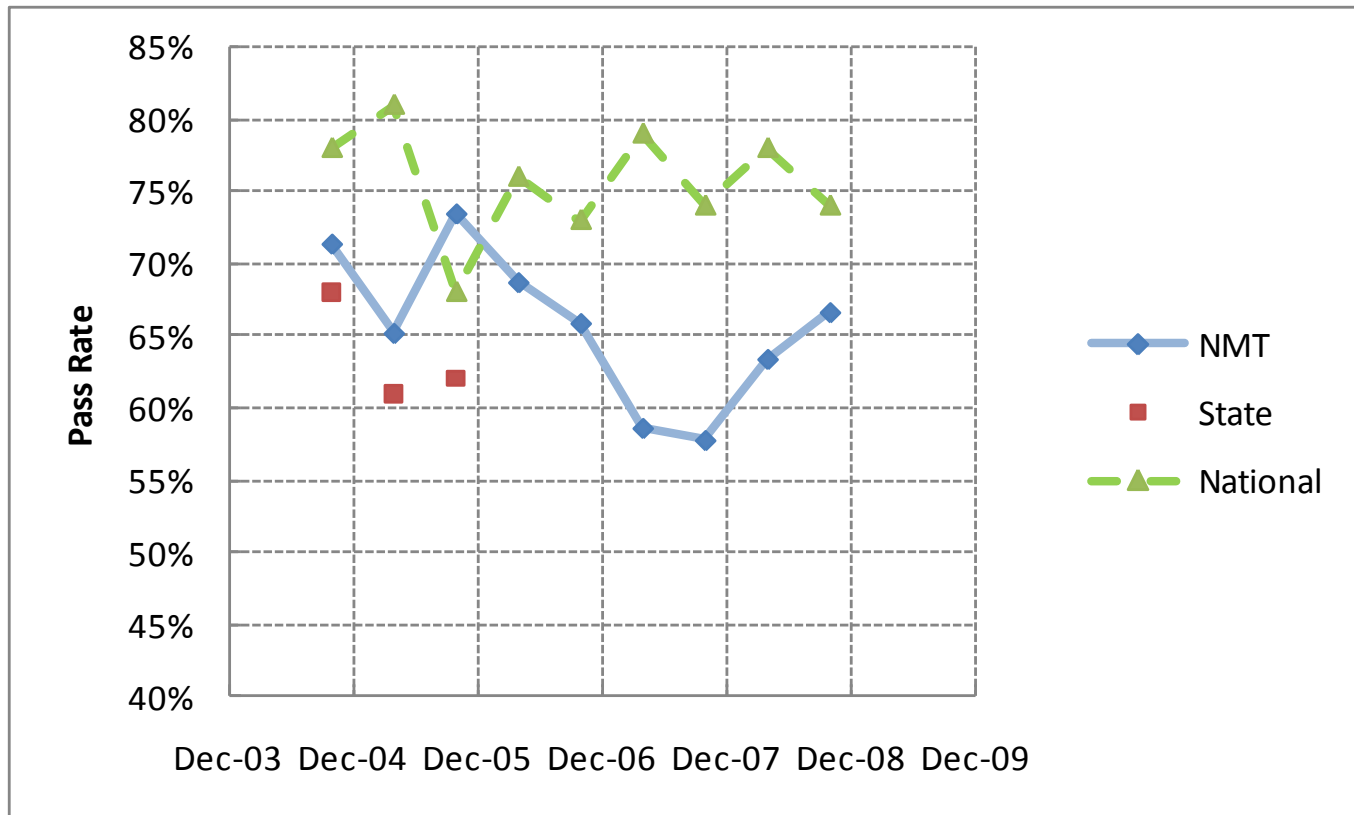


# FE Exam

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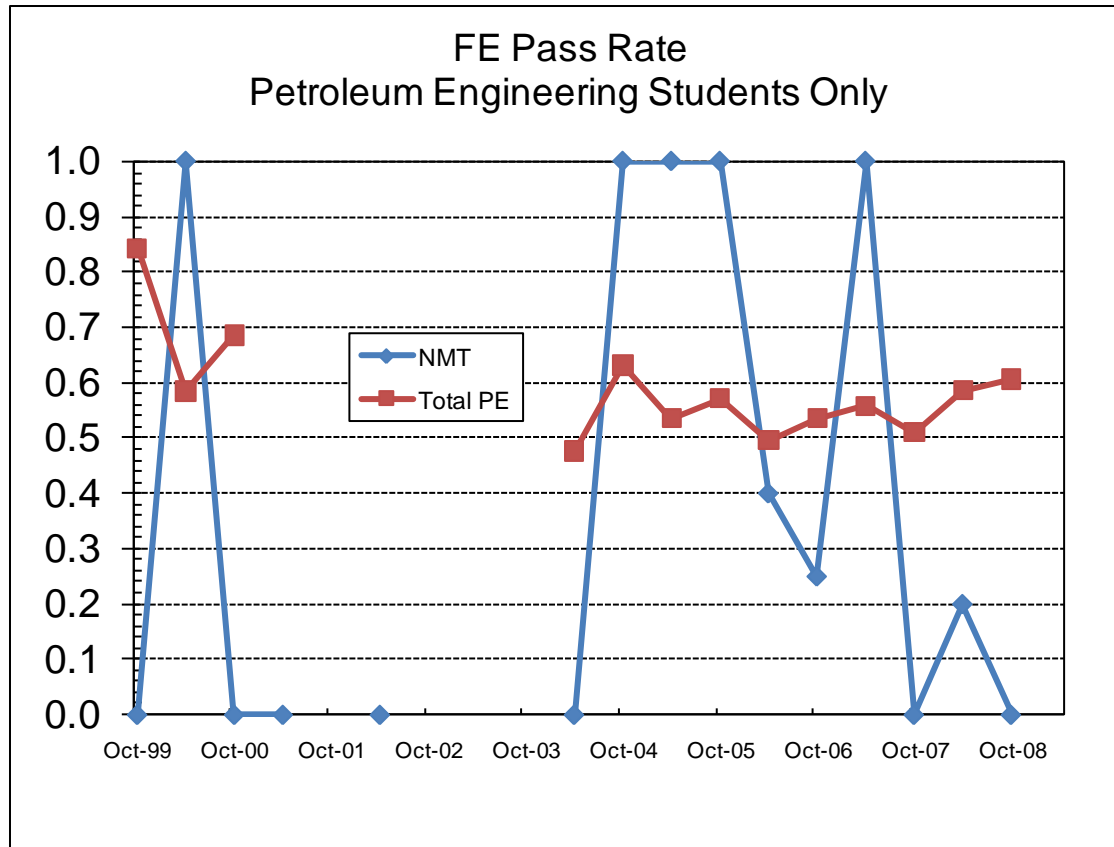
- AM Session...general
  - 120 Q in 12 topic areas...includes biology
- PM Session...discipline specific or general
  - 60 Q (2pts each)
  - No petroleum section

# FE Exam



Historical trend of pass rate (all disciplines)

# FE Exam



Historical trend of pass rate: Petroleum Engineering only



# Principles & Practice Exam

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- Discipline specific
- Tests practical knowledge
  
- Alternative: SPE administered competency exams



# Engineering Ethics

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## The Situation

ENGCO, an engineering firm, distributes a brochure that, along with the usual information, contains a listing of key personnel. Some are licensed professional engineers; others are not. In some instances, key personnel who do not hold engineering degrees and may in fact only be high school graduates, are given such titles in the brochure as *engineer*, *design engineer*, and so on. This practice has arisen from federal agency engineering contracts that refer to inspection personnel as *engineers*. ENGCO is concerned that the may be misrepresenting the facts, implying that there are more engineers on its staff than is the case.

## What do you think?

Is it ethical for ENGCO to refer to its, nondegreed personnel as *engineers*?



# Engineering Ethics

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## The Situation

Dee Duction is a principal in XYZ Company, a firm that performs utility audits for large corporations. As part of the services Duction's firm reviews the corporations' activities, budget, business forecast needs, requirements, and other factors; and makes recommendations concerning the most appropriate use of equipment and utilities in the performance of its survives. Generally, Duction recommends an approach that includes a request for proposals and list of potential service providers who generally prepare a proposal and bid to perform services for the firm.

In recent years, utility service providers have established a custom of providing a rebate to utility audit firms that perform the audits for the corporation. The rebate is calculated to reflect the savings the audit firm has provided for its clients. As a business practice, when Duction receives a copy of a rebate check from one of the service providers, Duction makes a copy of the check and sends the copy with half the amount of the check to the client with a note reading "Another benefit provided to you by XYZ Company". The general practice among many other utility audit firms is to keep the check and provide nothing to the client.

## What do you think?

Is it ethical for Duction to accept the rebate check? Is it ethical for Duction to send a portion of the rebate check to the client in the manner indicated?