



KHALIFA
UNIVERSITY

ENGR110
Introduction to Professional Engineering

Professional Registration and Management



The public case for Registration:

- Protection of the public was the justification for the passage of the first registration law.
- It gives assurance to the ordinary person that the job will be carried out by a qualified professional engineer.
- Fine line exists between legislation that protects the public and legislation that *protects the profession*.

The personal case for Registration:

1. Registration is a protection against future legislation that may make it more difficult to become a Registered Professional Engineer
2. An individual may have a career for which registration is required
3. A court of law may not recognize an individual as an engineer unless he or she is registered
4. A statute requiring engineers to be licensed makes a contract by such persons, if not licensed, void.

The personal case for Registration:

5. Many companies believe it is desirable for members of their engineering management to be registered.
6. Registration will undoubtedly be increasingly regarded by employers as an indicator of technical competence in a person seeking to be hired.
7. With international trade barriers being lifted, issues of who is competent to practice engineering across international borders are easily solved for those who are Registered Professional Engineers.

Requirements for Registration:

- Graduation from an ABET-accredited program, plus four years engineering experience acceptable to the board, plus 16-hours written examination OR
- Graduation from non-ABET-accredited program, plus six to eight years experience acceptable to the board, plus 16-hours examination OR
- For those with no degree, 12 or more years of experience acceptable to the board, plus 16-hours examination

Engineering Societies

1. Concerned with engineering profession as a Whole
 - National Academy of Engineering (NAE)
 - American Association of Engineering Societies (AAES) (has 28 engineering societies in it)
2. Concerned with a branch of Engineering
 - American Society of Civil Engineers (ASCE founded 1852)
 - American Society of Mechanical Engineers (ASME 1880)
 - Institute of Electrical and Electronic Engineers (IEEE 1884)
 - American Institute of Chemical Engineers (AIChE 1908)
3. Women and Minorities
 - Society of Women Engineers (SWE)

Typical Objectives of Engineering Societies (ASCE):

1. To encourage and publicize discoveries and new techniques throughout the profession.
2. To further research, design, and construction procedures in specialized fields of civil engineers.
3. To maintain and improve standards of engineering education.
4. To enhance the standing of engineers.
5.

Objective implementation methods

1. National and regional meetings
2. Technical journals
3. Student chapters

Reasons for becoming a member while being a student

1. Contacts with industry
2. Practice running a chapter
3. Receive society periodical
4. Continuing education courses
5. Fun

Examples of membership level (ASME):

1. Student member: belongs to a student chapter
2. Associate member graduated with 8 years experience
3. Member six years or 12 based on school
4. Fellow: must be nominated by fellow engineers + 25 year of which 13 as a member
5. Honorary member:
6. Executive affiliate
7. Affiliate

Management:

- Some engineers will go into management and have rewarding careers.
- Others will not go into management, and they, too, will have rewarding careers.
- More than 50% of engineers eventually go into management.
- Industry leaders with engineering degrees are playing large role in top 1,000 companies in the States.
- Engineers are as likely to be recognized as business and industry leaders as they are for their technical accomplishments.

What Do Managers Really Do?

- They manage money, materials, and people.
- Engage in a daily decision making.
- A large part of any executive's time is taken up by reading letters, memos, company reports, policy statements, proposals, specifications, laws, regulations, contracts, analyses, magazines, and newspapers.
- Committee meetings as well as informal interactions with one or more associates.

Levels of Management:

- Executive: Chairman of the board, president, vice-president, general manager, treasurer, controller.
- Manager: Plant manager, chief engineer, director of engineering, general sales manager, personal manager.
- Superintendent: Chief project engineer, chief industrial engineer, group head, regional sales manager, assembly-line superintendent.
- Supervisor: Project engineer, office manager.

Attractions to Management Careers:

- Executives normally get higher salaries.
- Engineering salary surveys continue to show that as a group, managers make approximately 20% more than non-managers with the same years of professional experience.
- In addition they get bonuses and company shares.
- Have interest in managing people.

Management Creativity:

- After they make enough money, executives admit that salary becomes unimportant.
- The real motivation for these people other than money is creativity.
- Executives enjoy seeing programs that they originated take shape and prosper, accompanied by organizational flowering and growth.
- Many executives today especially those in large companies believe that corporations have a specific responsibility to the public.
- They believe that corporate profits must be accompanied by social benefits and that this must be made a conscious part of company policy.

Challenge:

- Challenge is one of the elements that push people into management careers.
- It is the excitement of the game itself that some enjoy.
- A high level of energy and drive are universally recognized as essential ingredients for management success.
- A person who does not have this high level of drive, but who aspires to management career, has already made an important mistake.

Drawbacks In Management Career:

- Loss of Personal Freedoms
- Suppression of Emotion: Stress
- Family Impact
- A conflict of Moralities

Important Qualities of the Executive:

1. Has high tolerance for frustration
2. Permits criticism without feeling personally threatened or offended
3. Engages in continual self-examination
4. Is a strong, cool competitor
5. Expresses hostility tactfully
6. Accepts both victories and setbacks with controlled emotions

Getting There...

- One of the reasons for the popularity of engineering as a background for management is the training in solving problems that engineers receive at university
- This skill is obviously a useful one to managers
- College students interested in management careers have sometimes decided that the best thing to do is to get a B.Sc. in engineering, followed by a master's degree in business administration.
- Also master's program in engineering management is another kind of graduate program which is accessible to engineers with management aspirations.
- Engineering students should carefully consider their own personal career goals before making the decision to proceed on to graduate school in business or management.

Summary of the Essential Managerial Characteristics

1. A willingness to place the company first
2. A high degree of aggressiveness and drive, including a willingness to work long hours
3. An ability to handle others
4. A strong desire for personal status and economic gain
5. A desire to be in control
6. A high degree of tolerance for frustration and disappointment
7. Persistent optimism
8. The ability *to finish* a job as well as to initiate it
9. Good judgment and logical thinking ability
10. The ability to communicate, not only in writing but above all, orally

