



GE105

Introduction to Engineering Design

College of Engineering

King Saud University

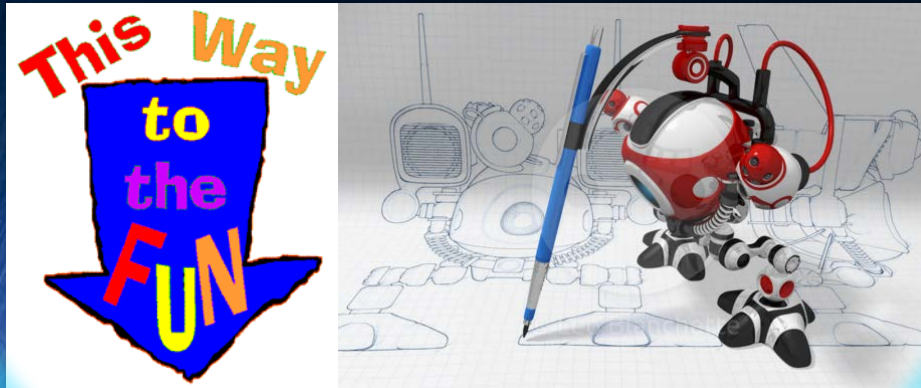
Lecture 3. The Engineering Profession

FEBRUARY 2016

Scientists Versus Engineers

Engineer

Applies knowledge of math and the physical sciences to the efficient **design** and **construction** of usable devices, structures and processes.



Scientist

The primary goal is the expansion of **knowledge** and **understanding** physical processes.



What is a Profession?

- Requires specialized and highly skilled knowledge
- Requires an academic training
- Regulated by professional bodies
- Examination of competence
- Vital to society
- Compensation is higher than other occupations
- Enforces high standard of legal and ethical conduct



Is Engineering a Profession?

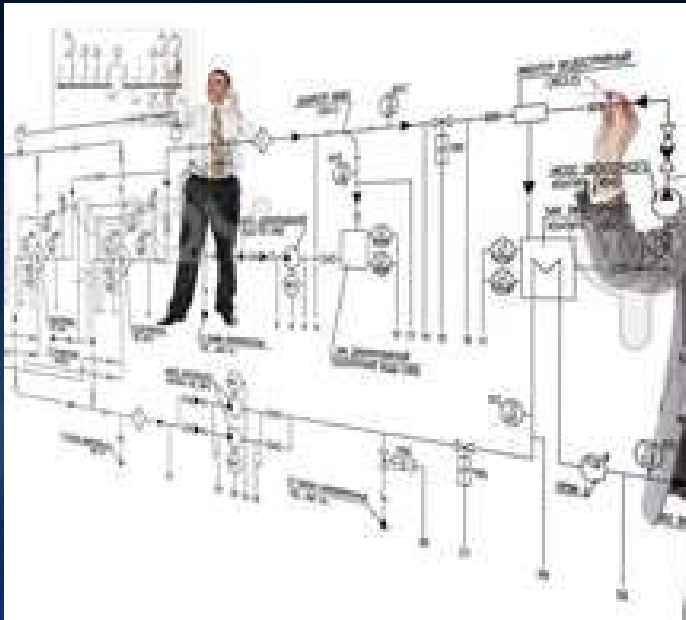
Engineering possesses those attributes that typically characterize a profession



- Satisfies an indispensable and beneficial need
- Requires the exercise of carefulness and judgment
- Involves activities that require knowledge and skill not commonly possessed by the general public
- Has group consciousness for the promotion of knowledge and professional ideas and for rendering social services
- Has a legal status and requires well-formulated standards of admission

The Engineering Profession

- Engineering is a career based on **logical**, systematic problem **solving**, generally in high-tech, industrial, or scientific fields.
- Whether the end result is a product, a process, a system or service, engineers need to consider **safety**, **reliability**, and **cost**-effectiveness.



What Engineers Do?

- **Design products**
- Design **machinery** to **build** and **test** these products
- Design **Plants** in which those products are made
- Design the **systems** that ensure the **quality** and **efficiency** of the **manufacturing process**
- Design, **plan** and **supervise** the **construction** of buildings, highways, transit systems.
- **Develop** and **implement** ways to extract, process and use raw materials such as petroleum and natural gas
- **Exploit** resources to **satisfy** the nations needs



Elements of Professionalism



Elements of Professionalism (contn'd)



- Relevant, up-to-date knowledge and capabilities in a given area
- Appropriate non-technical competences: communication, business, leadership and management skills
- A broader foundation of relevant experience and understanding
- Relevant qualifications
- Continuing Professional Development

Elements of Professionalism (contn'd)



2
Integrity

- A clear commitment to abide by a code of ethics which is recognized and administered by the professional community.

Elements of Professionalism (contn'd)



3 Responsibility and Accountability

- A set of personal obligations and responsibilities which sit alongside the contractual obligation to an employer or client.
- A matching accountability which is also separate from that of an employer.

Elements of Professionalism (contn'd)



4 Public Obligation

- Regard for and contribution to the public good
- Protect the public interests
- Social responsibility
- Commitment and contribution to the professional community

Engineering Departments

