



GE106

Introduction to Engineering Design

College of Engineering

King Saud University

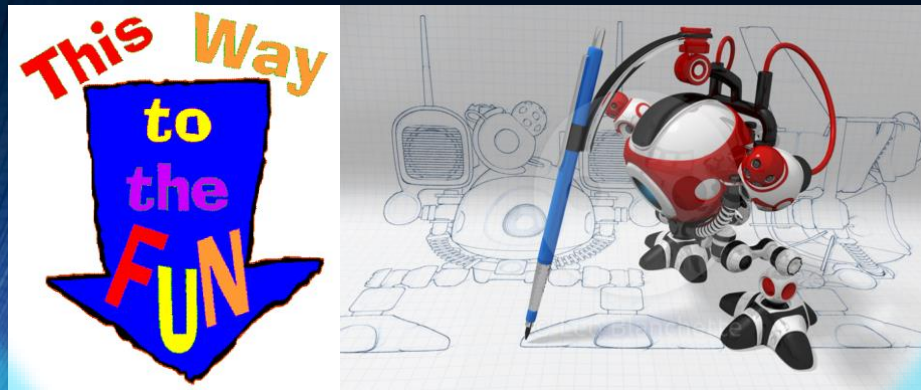
# Lecture 3. *The Engineering Profession*

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# 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?

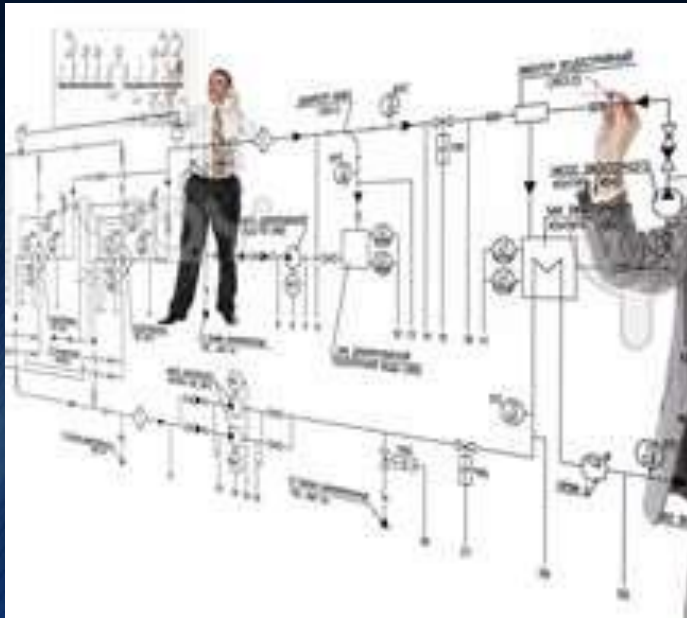
Engineering possesses those attributes that typically characterize a profession



- 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)

1

## Competence

- 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

