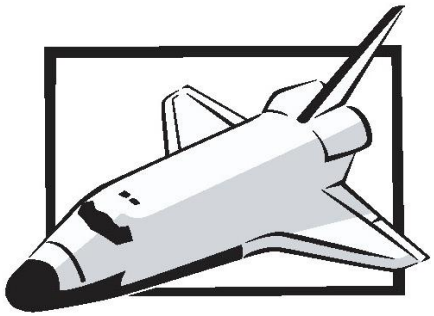
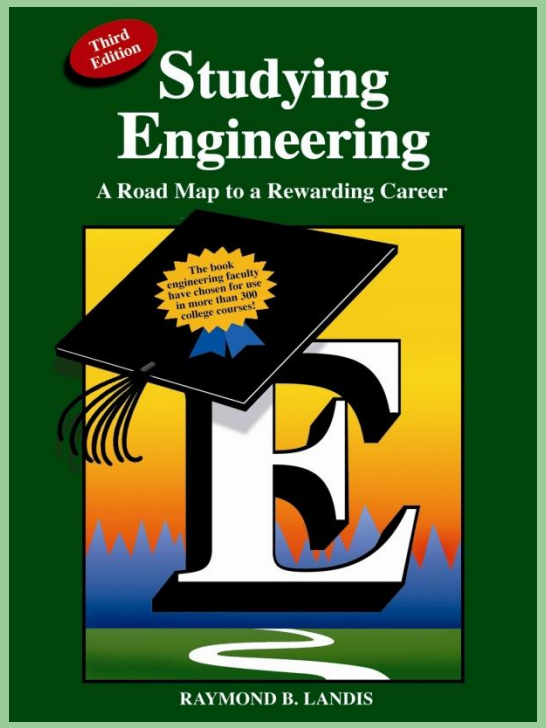


Chapter 2



The Engineering Profession

Lecture overview

- What is Engineering?
- Greatest Engineering Achievements of the 20th Century
- What Computer Engineers do?
- The Engineering Process
- Rewards of Engineering Profession

What is Engineering?

Engineering is the profession

in which a knowledge of the mathematical and natural sciences is applied

to develop ways to use the materials and forces of nature

for the benefit of humankind

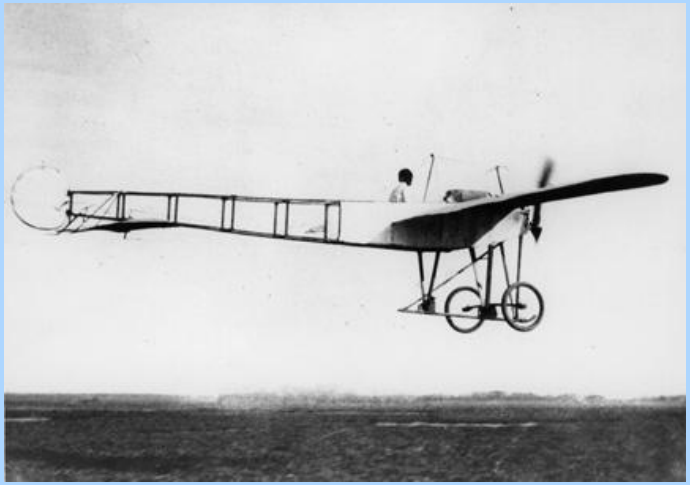
Greatest Engineering Achievements of 20th Century

Electrification

Automobile

Greatest Engineering Achievements of 20th Century

Airplane



Electronics

Safe Water

Greatest Engineering Achievements of 20th Century

Radio and Television

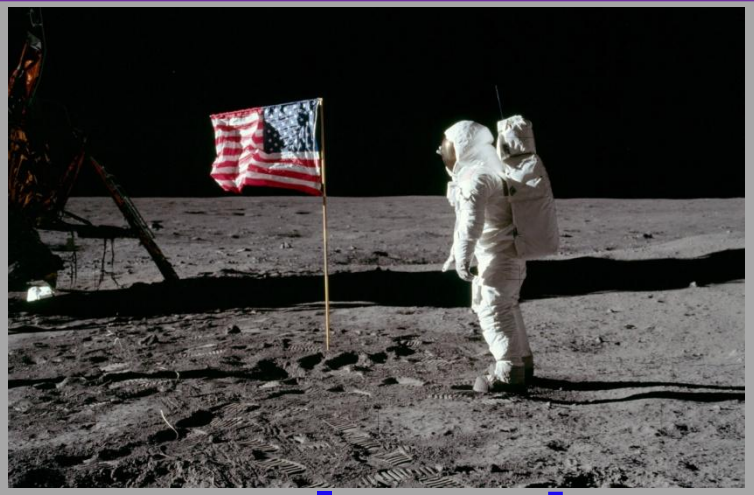
Computers

Telephone

Greatest Engineering Achievements of 20th Century

Interstate Highways

Space



Exploration

Greatest Engineering Achievements of 20th Century

Technologies

Health

Nuclear

Imaging

What Computer Engineers Do?

Choose one thing that you would like to do

The Engineering Design Process

1. Customer need or opportunity
2. Problem definition/Specifications
3. Data and information collection
4. Development of alternative solutions
5. Evaluation of optimal design
6. Implementation of optimal design

The Engineering Design Process

Brainstorm:

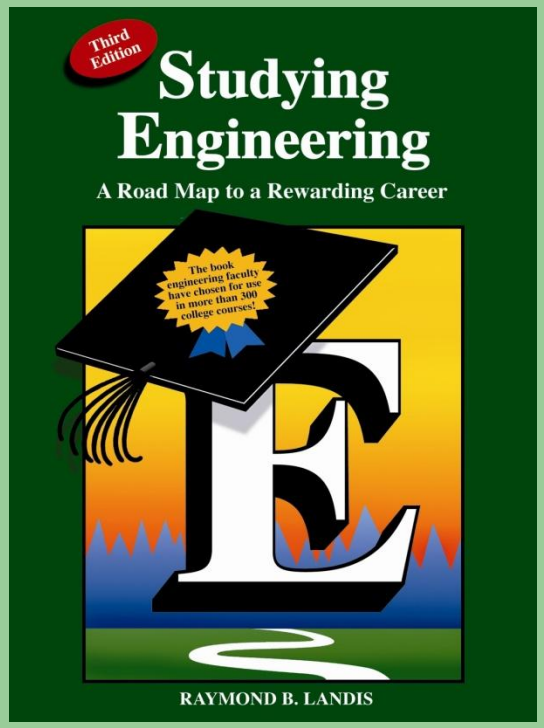
1. Customer needs and opportunities

Identify customer needs

in the modern world

The rest of the steps you will practice later in Group Work

Engineering Job Functions

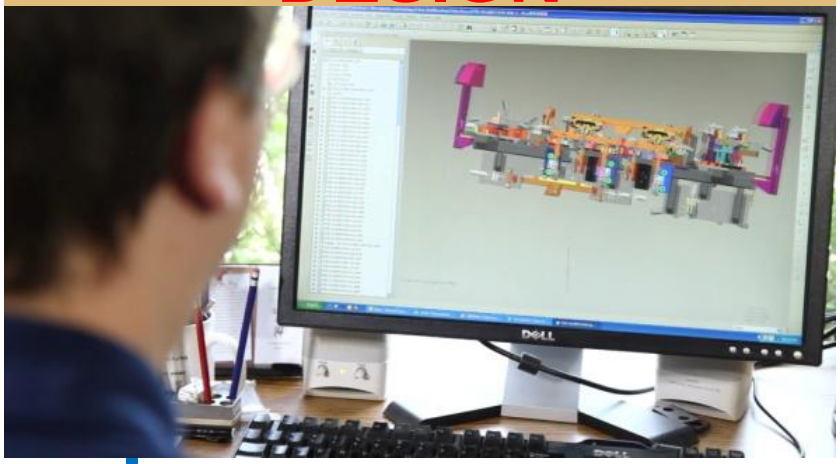


Engineering Job Functions

Identify one positive thing for you in the movie

Engineering Job Functions

DESIGN



DEVELOPMENT

TEST

Engineering Job Functions

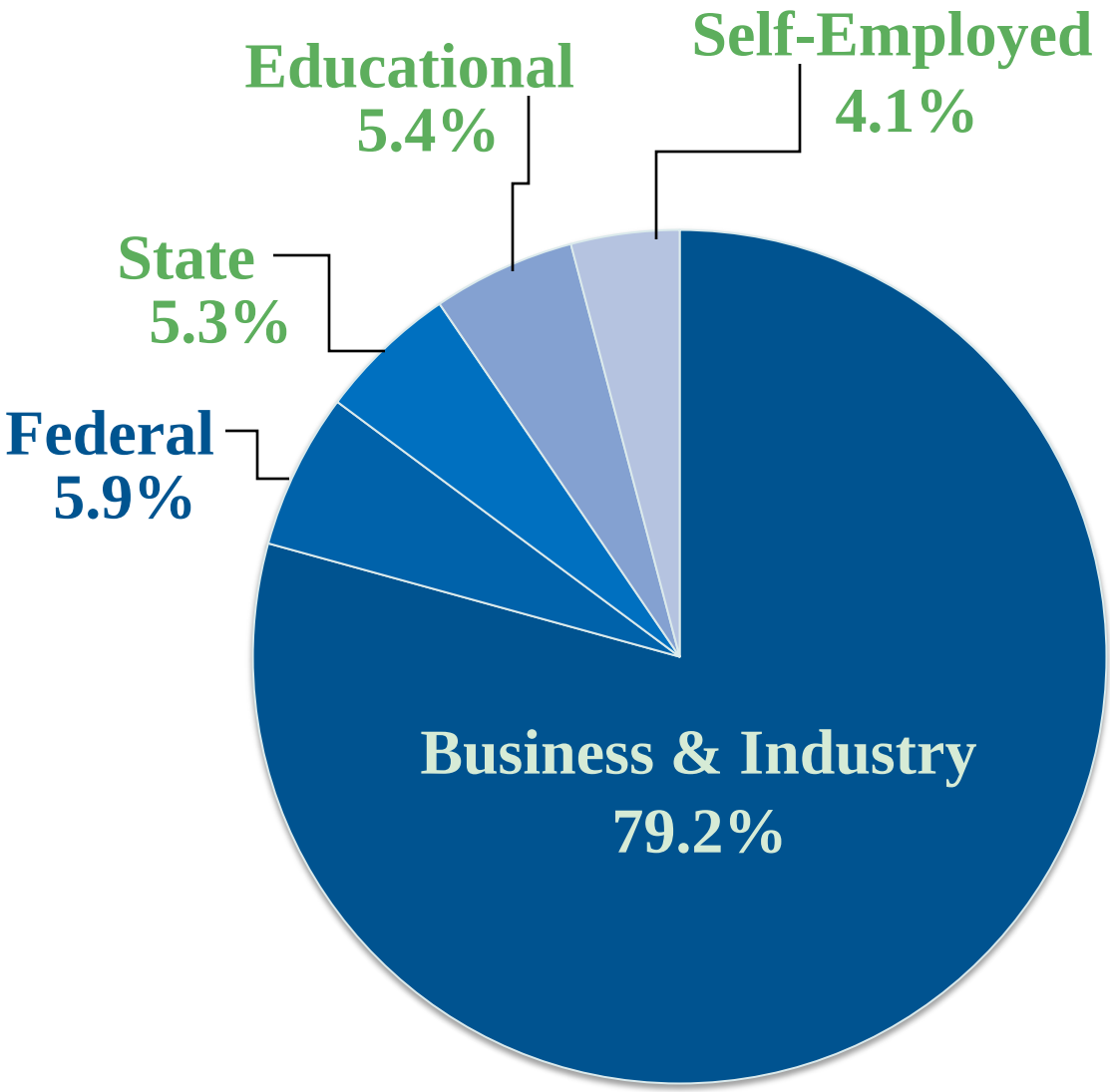
MANAGEMENT

TEACHING

RESEARCH

SALES

Employment Opportunities



Employment Opportunities

Business & Industry

Manufacturing

Computer & electronic product manufacturing

Non-Manufacturing

Utilities

Employment Opportunities

1,179

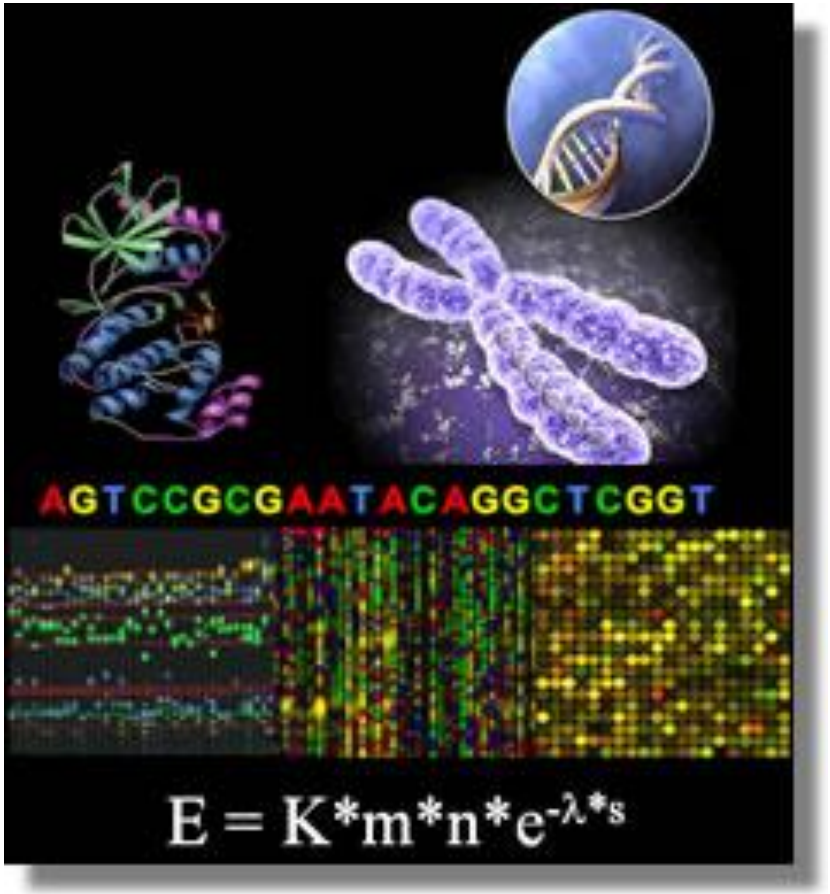
national industries

The North American Industry Classification System NAICS

Important Fields for the Future

Bioengineering

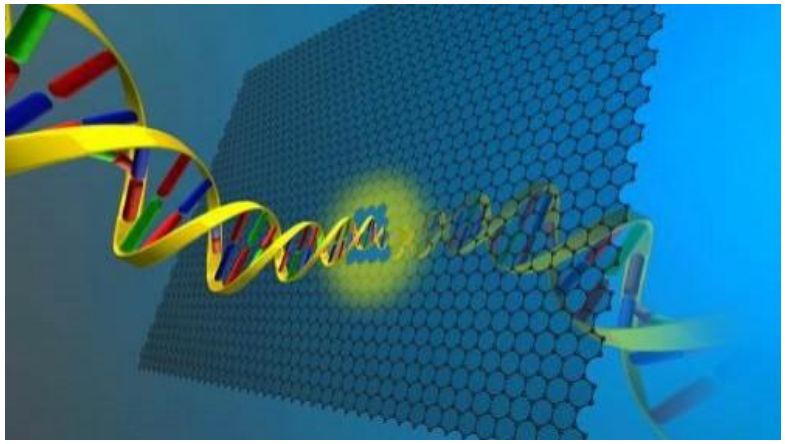
Tissue engineering



Bioinformatics

Important Fields for the Future

Nanotechnology



Read DNA

Kill cancer cells

Important Fields for the Future

Advanced Environmental Technology

Ozone regenerating systems

Group Activity

Identify three rewards of Engineering profession

(money is obvious reward, so do not mention it)