

Engineering

Is the art of applying scientific and mathematical principles, experiences judgments and common sense to create or develop new products that benefit people and solve problems

This material is based upon work supported by the National Science Foundation under Grant No. 0402616. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the view of the National Science Foundation (NSF).

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Mechanical Engineering

- Anything that is mechanical or must interact with another machine or a human being
- Many do research, test and design work while others work in maintenance, technical sales and production operations
- Called the **Masters of Modern Machines**
- 2nd largest branch of Engineering

Mechanical Engineering

- Employment
 - Everywhere
 - Involved in design and manufacturing techniques that require creative products, industrial robots, nuclear reactors, and high speed trains

Mechanical Engineering

- Schooling
- B.S. degree with major course work in mechanical engineering

Mechanical Engineering

- Salary
 - Median salary in North Dakota
 - \$49,330
 - Median Salary in the Country
 - \$55,633

2004 www.payscale.com/research

Civil Engineering

- Involved in the design and construction of large stationary structures.
- One of the oldest disciplines of engineering

Civil Engineering

- Involved in:
 - Design and development of central city areas
 - Working with architects to design buildings
 - Helps create transportation systems, public utilities, and public services

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Civil Engineering

- Employment
- Private companies
- City and Government

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Civil Engineering

- Salary
 - Median salary in North Dakota
 - \$41,182
 - Median Salary in the country
 - \$55,458

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Industrial Engineering

- Responsible for helping an organization use the people, materials, equipment, and information they have in the most efficient way possible to make or process a product (need to be able to work with people)
- More concerned with the processes involved than the product.

Industrial Engineering

- Companies hire industrial engineers to increase productivity through:
 - Effective management
 - Organizational skills

Industrial Engineering

- Some duties are:
 - Develop payment systems
 - Conduct time and motion studies
 - Ergonomic studies
 - Developing and using job evaluations
 - Determine the best layout of machines and equipment

Industrial Engineering Employment

- Manufacturing
- Energy and Utilities
- Health Care / Hospitals
- Government
- Financial Institutions
- Retail Stores
- Transportation
- Entertainment

Industrial Engineering

- Salary
 - Median salary in North Dakota
 - \$42,740
 - Median Salary in the country
 - \$57,951

Environmental Engineering

- Involves developing methods to solve problems related to the environment
- Problems that can and do occur anywhere in the world

Environmental Engineering

- Problems:

- Surface and groundwater pollution
- Air pollution
- Sanitary waste disposal
- Water treatment plants
- Recycling
- Hazardous waste disposal

Environmental Engineering

- Schooling
- Technical School

Environmental Engineering

- Salary
 - Median salary in North Dakota
 - \$40,050
 - Median Salary in the country
 - \$56,347

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Electrical Engineering

- A profession that requires knowledge of science, math, computers and other technology
- Strong problem-solving skills
- They design construct and maintain the many products, services and systems that run our world

Electrical Engineering

- Work with devices and equipment ranging in size and power levels from
 - Very small (silicon-based integrated circuits)
 - Very large (power stations)
- They design, develop, test, and supervise the manufacturing of all types of electronic and electrical equipment

Electrical Engineering

- The field grew and is now split into two sub fields:
 - Electrical = power stations and instrumentation
 - Electronic = solid state electronic, computer design and telecommunications

Electrical Engineering

- Schooling
- B.S. degree
- Technical Schooling

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Electrical Engineering

- Salary
 - Median salary in North Dakota
 - \$59,890
 - Median Salary in the country
 - \$62,209

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Chemical Engineering

- To solve problems by creating new products or by using chemicals to connect science and manufacturing
- Uses several sciences like chemistry and physics

Chemical Engineering

- Examples of their work
- Try to make new materials for clothing and carpeting that won't stain
- Take seawater and desalinate it
- Developing ceramic tiles to absorb heat for the space shuttle reentry

Chemical engineering

- Employment
- Biotechnology
- City and Federal government
- Health Care
- Industry

Chemical Engineering

- Education
 - Minimum B.S degree
 - Masters degree

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Chemical Engineering

- Salary
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Nuclear Engineering

- Concerned with the design and construction and operation of nuclear reactors
- Involved with the control and maintenance of nuclear power plants

Nuclear Engineering

- Employment
- Nuclear technology for medical diagnosis
- Development of submarines, ships and spacecraft (that will travel to Mars)
- Design waste management plants for hazardous waste material
- More than just Nuclear Weapons

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Nuclear Engineering

- In 1996 there were 110 commercial reactors in 32 states
- 434 reactors in 33 countries
- U.S. greatest producer of Nuclear power
 - 31% of the worlds nuclear power
 - 22% of the energy in the U.S. comes from

Nuclear Engineering

- U.S. greatest producer of Nuclear power
 - 31% of the worlds nuclear power
 - 22% of the energy consumed in the U.S. comes from nuclear power
 - 77% of the energy consumed in France comes from nuclear power
 - 6 states rely on nuclear power for more than 50% of their power
 - The closest reactor to us is in Minnesota
 - North Dakota get none of their power from Nuclear

Nuclear Engineering

- Schooling
- B.S. Degree

Nuclear Engineering

- Salary
 - Median salary in North Dakota
 - There are no jobs
 - Median Salary in the country
 - \$74,170

Aerospace Engineering

- Combines aeronautical engineering (flights in our atmosphere) with astronautical engineering (flights in space).
- Involved in design of aircraft and spacecraft, propulsion systems, and spacecraft mission trajectories.

Aerospace Engineering

- They have their roots in mechanical engineering
- Are experts in aerodynamics, propulsion, structures and astro-dynamics

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Aerospace Engineering

- Types of Projects
 - Development of the space shuttle
 - New ways of delivering fuel to rockets
 - Protection of the shuttle from heat on reentry
 - Working on quieter, more fuel efficient airplanes

Aerospace Engineering

- Schooling
- Masters degree

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Aerospace Engineering

- Salary
 - Median salary in North Dakota
 - No information found
 - Median Salary in the country
 - \$46,289

Suggestions

- Identify standards and benchmarks addressed by this information
- Make a title slide as your first slide (Course & Unit).
- Proof all the slides for grammar and spelling errors.