Session 4 - SYSTEMS OF PRODUCTION, QUALITY, PRODUCTIVITY AND COMPETITIVENESS

WORK OF MECHANICAL ENGINEERS

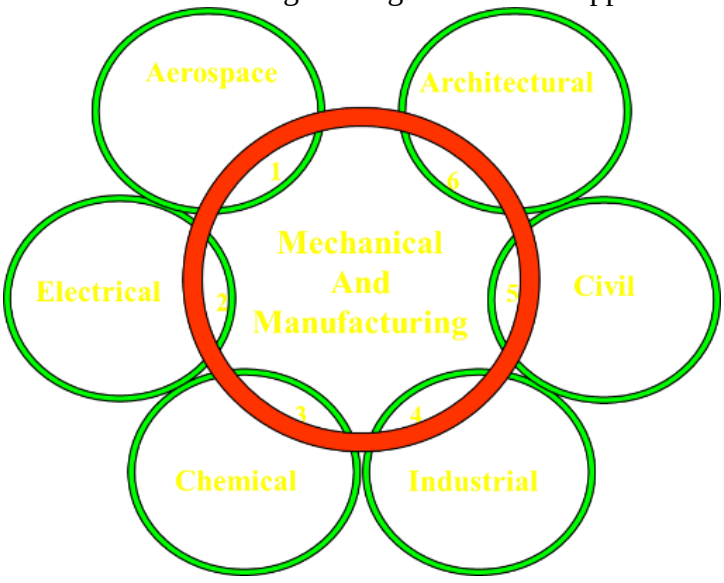
- Mechanical engineers research, develop, design, manufacture, and test tools, engines, machines, and other mechanical systems.
- They work on power-producing machines .
- They develop machine tools, industrial production equipment and robots, and bio-mechanics and medical related industries.
- Mechanical engineers also design tools that other engineers need for their work.
- The field of Micro-Electro-Mechanical Systems and nanotechnology, which involves the creation of high-performance materials and components by integrating atoms and molecules, is introducing entirely new principles to the design process.

Computer Aided Engineering

- Computers assist mechanical engineers by accurately and efficiently performing computations, and by permitting the modeling and simulation of new designs as well as facilitating changes to existing designs.
- Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM) are used for design data processing and for turning the design into a product.

Demand for Mechanical Engineers

- Over the past thirty years, the demand for Mechanical Engineers has been ranked as the first or second relative to other Engineers disciplines.
- Employment of mechanical engineers is projected to grow more rapidly as the demand for improved machinery and machine tools grows.
- Also, emerging technologies in biotechnology, materials science, and nanotechnology will create new job opportunities for mechanical engineers.
- Additional opportunities for mechanical engineers will arise because a degree in mechanical engineering often can be applied in other engineering specialties.



Mechanical and Manufacturing Interactions with other Disciplines

1. Dynamics Systems, Fluid Mechanics, Solid mechanics, Design, and Thermal Science
2. Mechatronics, Robotics, and Control
3. Fluid Mechanics, Thermal Science, and Control
4. Manufacturing Systems, Production, and Design
5. Fluid Mechanics, Solid Mechanics, and Environmental
6. Design of Mechanical Systems

DEMAND FOR SKILLED TECHNICAL PROBLEM-SOLVERS

- As technology increases exponentially with each decade, the demand for skilled problem-solvers who excel in all fields of engineering grows, as well.
- Mechanical and Manufacturing engineering in particular requires the design, testing, and manufacturing skills that are necessary to compete in today's -- and tomorrow's -- technologically complex world.

TODAY'S MECHANICAL & MANUFACTURING ENGINEERS

- Today's mechanical engineers use cutting-edge computing, smart sensors, and electronic technology to design and manufacture automated products for the future
- Science and technology will continue to expand, and so will the demand for skilled mechanical engineers

EMERGING TECHNOLOGY

With emphases in areas such as smart structures, electronics packaging, energy and environmental engineering, and manufacturing, the department has strong links with other engineering disciplines and will continue to interact with other areas

This interdisciplinary focus benefits students, faculty, and industry

JOB OPPORTUNITIES

- AEROSPACE INDUSTRY
- MANUFACTURING AND PRODUCTION COMPANIES
- AUTOMOTIVE AND RELATED INDUSTRIES
- ENGINEERING CONSULTING FIRMS
- DEFENSE RELATED INDUSTRIES
- FOOD INDUSTRY
- BIOMECHANICS AND MEDICAL INDUSTRIES
- ENVIRONMENTAL RELATED INDUSTRIES
- AIR QUALITY CONTROL INDUSTRIES
- OCEAN ENGINEERING
- SOFTWARE ENGINEERING
- ETC.