**Ansal University**

**School of Engineering and Technology**

**MECHANICAL ENGINEERING**

Mechanical Engineering is one of the most established, diverse and essential engineering disciplines and deals with the design, research, analysis, manufacturing and development of Mechanical and Industrial Systems. Engineering Disciplines of Aerospace, Aeronautical and Automobile are also closely allied with Mechanical Engineering and had spun out of Mechanical Engineering. This discipline involves the study of Design, Materials, Solid Mechanics, Fluid Mechanics, Thermodynamics, Energy Systems (Renewable and Nonrenewable), Refrigeration, Heat Transfer, Control Systems (Hydraulic, Pneumatic and Robotic), Instrumentation, Industrial Engineering and Manufacturing Processes and their integration to develop Mechanical Systems and to plan and execute Industrial Operations effectively and efficiently to make different products.

**Specializations within ME:**

* Design
* Thermal
* Fuels and Combustion
* Mechanics
* Turbomachinery
* Energy Systems
* Industrial Engineering
* Materials Engineering
* Production and Manufacturing
* Automation
* CAD/CAM
* Mechatronics and Nanomechanics

**Scope for ME:**

Mechanical Engineering graduates are mostly involved in sectors like Power Generation, Mining, Automotive, Aeronautical, Shipping, Steel, Cement, Oil and Gas Exploration, Textile, Printing, Bio-Mechanical, Refrigeration and Air-Conditioning, Micro-Grid, Space Research, Automation, Automation, Manufacturing Industry and Service Industry etc. Application of Mechanical Engineering is found in all kind of industries, therefore the demand of Mechanical Engineering graduates is very high and ever present.

**Job Prospects for ME:**

Mechanical Engineering Graduate may be employed

* Design Engineer
* Production Engineer
* Maintenance Engineer
* Automotive Engineer
* Mining Engineer
* Marine Engineer
* Quality Control Engineer
* Quality Assurance Engineer
* Managerial Positions

They may be employed by many varieties of organizations such as:

PSUs, Private Industrial Conglomerates

BHEL, Shipping Corp of India, HAL, RIL, Essar, L&T, Bharat Forge, Maruti Suzuki, Tata Group, Birla Group, Hero Group, Bajaj Group, NTPC, ONGC

CSIR Labs

Central Mechanical Engineering Research Institute (CMERI), Indian Institute of Petroleum (IIP), Central Institute of Mining and Fuel Research (CIMFR)

DRDO Labs

Combat Vehicles Research & Development (CVRDE), Gas Turbine Research Establishment (GTRE), Naval Science and Technological Lab (NSTL), Vehicles Research & Development Establishment (VRDE)

ISRO Centers

Liquid Propulsion Systems Center (LPSC)

Vikram Sarabhai Space Center (VSSC)

Graduates of Mechanical Engineering may go for M.Tech., Ph.D., or M.B.A. either in India or abroad.

A very enterprising Mechanical Engineering Graduate can also start an industry in various fields like development of renewable energy systems, small scale manufacturing units for a multinational company, component or service provider for automobiles or integrated steel plants.

**A Few Visionaries, Entrepreneurs, Scientists and Teachers of ME:**

**Willis Carrier** pioneered design and manufacture of modern Air Conditioning Systems

**Dugald Clerk** invented 2-Stroke Engine

**Nicolaus Otto** developed first commercial 4-Stroke Engine

**James Watt** invented Steam Engine

**Rudolf Diesel** invented Diesel Engine

**Karl Benz** was the inventor of Petrol powered Automobile and Founder of Mercedes-Benz

**Anil Kakodkar** is an Indian nuclear scientist and mechanical engineer. He was the Chairman of the Atomic Energy Commission of India and the Secretary to the Government of India, he was the Director of the Bhabha Atomic Research Centre, Trombay from 1996-2000. He was awarded the Padma Vibhushan, India's second highest civilian honour, on January 26, 2009.

**Jamnalal Bajaj**, Founder of Bajaj Auto Ltd, an Indian 2-wheeler and 3-wheeler manufacturer

**Brijmohan Lall Munjal**, Founder of Hero Group, (Hero Cycles and Hero Motor Corp)

**N.A. Kalyani**, Founder of Bharat Forge, which is a forging company based in Pune, India

**T. V. Sundram Iyengar**, Founder of TVS group whose subsidiary TVS Motors won the Deming Application Prize in 2002

**R. Narasimha** is an Indian scientist and fluid dynamicist. He was a Professor at the Indian Institute of Science (IISc), Director of National Aerospace Laboratories (NAL) and the Chairman of Engineering Mechanics Unit at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR). He is now the Pratt & Whitney Chair in Science and Engineering at the U. of Hyderabad. He has been awarded the Padma Vibushan, India's second highest civilian award in 2013.

**Recent Developments in ME**

* Electricity from renewable energy sources such as Wind, Solar, Ocean, Geothermal, Tidal.
* Defense weapons
* Fuel efficient vehicles and engines
* Intelligent Vehicles
* Micro Electro-Mechanical Systems
* Nano Electro-Mechanical Systems
* Structural Composites
* Pollution Control Services
* Efficient energy conversion systems
* Environment friendly refrigeration systems
* Computational Fluid Dynamics
* Finite Element Analysis
* Multiple Criteria Decision Making

*Summary/ME/SET/Ansal U./Ver 1.1/Jun 21, 2014*