Course Number and Name

BME203 BASIC MECHANICAL ENGINEERING

Credits and Contact Hours

2 & 30

Course Coordinator's Name

Mr Karthik

Text Books and References

TEXTBOOKS:

1. T.J.Prabhu etal, "Basic Mechanical Engineering", Sci Tech Publications(p) Ltd,2000

REFERENCES:

1. NAGPAL,G.R,"Power plant Engineering",Khanna Publishers, 2004.
2. RAO.P.N,"Manufacturing Technology", Tata McGraw-Hill Education,2000.
3. Kalpakjian,"Manufacturing Engineering and Technology ",Adisso Wesley publishers, 1995.
4. Ganesan.V, "Internal Combustion Engines", Tata McGraw-Hill Education , 2000.
5. C.P.Arora, "Refrigeration and Air Conditioning",TataMcGraw-HillEducation,2001.
6. V.B.Bhandari,"DesignofMachineelements",TataMcGraw-HillEducation,2010.

Course Description

- The program educational objectives (PEOs) for the mechanical-engineering program are to educate graduates who will be ethical, productive, and contributing members of society.
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- The ability to apply principles of engineering, basic science, and mathematics to design and realize physical systems, components, or processes

Prerequisites	Co-requisites
+2 Maths & Physical Science	NIL

Required, elective, or Selected elective (as per Table 5-1)

Required

Course Outcomes (COs)

CO1 :an ability to apply knowledge of mathematics

CO2 :an ability to apply knowledge of science, and engineering

CO3 :Ability to design and conduct experiments, as well as to analyze and interpret data.

CO4 :an ability to function on multi-disciplinary teams

CO5 :To provide basic Knowledge of basic manufacturing process.

CO6 :ability to identify, formulate, and solve engineering problems

Student Outcomes (SOs) from Criterion 3 covered by this Course

cos/sos	a	b	c	d	e	f	g	h	i	j	k
CO1	M	M	M	H	M		M			L	L
CO2	H	M	M	H	H		M			L	L
CO3	H	M		H	H		M			L	L
CO4	H	M		H	H		M			L	L
CO5	H	M	M	H	H		M			L	L
CO6	H			H	H		M			L	L

List of Topics Covered

UNIT-I ENERGY RESOURCES AND POWER GENERATION 6

Renewable and Non-renewable resources-solar, wind, geothermal, steam, nuclear and hydro power plants-Layout, major components and working. Importance of Energy storage, Environmental constraints of power generation using fossil fuels and nuclear energy.

UNIT-II IC ENGINES 6

Classification, working principles of petrol and diesel engines-two stroke and four stroke cycles, functions of main components of I.C engine .Alternate fuels and emission control.

UNIT-III REFRIGERATION AND AIR-CONDITIONING SYSTEM 6

Terminology of Refrigeration and Air-Conditioning, Principle of Vapor Compression & Absorption system- Layout of typical domestic refrigerator-window & Split type room air conditioner.

UNIT-IV MANUFACTURING PROCESSES 6

Brief description of Mould makes and casting process, Metal forming, Classification types of forging, forging operations, Brief description of extrusion, rolling, sheet forging, and drawing. Brief description of welding, brazing and soldering. Principal metal cutting processes and cutting tools, Brief description of Centre lathe and radial drilling machine.

UNIT-V MECHANICAL DESIGN 6

Mechanical properties of material-Yield strength, ultimate strength, endurance limit etc., Stress-Strain curves of materials. Stresses induced in simple elements. Factor of safety-Design of Shaft sand belts. Types of bearing sand its applications. Introduction to CAD/CAM/CIM & Mechatronics.