

Course Number and Name												
BME103 - BASIC MECHANICAL ENGINEERING												
Credits and Contact Hours												
3 & 45												
Course Coordinator's Name												
Mr.Karthick												
Text Books and References												
TEXTBOOKS:												
1. T.J.Prabhu et al, "Basic Mechanical Engineering", SciTech Publications(p)Ltd,2000												
REFERENCES:												
1. NAGPAL,G.R,"PowerplantEngineering",KhannaPublishers,2004.												
2. RAO.P.N,"ManufacturingTechnology",TataMcGraw-HillEducation,2000.												
3. Kalpakjian,"ManufacturingEngineeringandTechnology",AdissoWesleypublishers,1995.												
4. Ganesan.V,"Internalcombustionengines",TataMcGraw-HillEducation,2000.												
5. C.P.Arora, "Refrigeration and Air Conditioning",TataMcGraw-HillEducation,2001.												
6. V.B.Bhandari, "Design of Machine elements", Tata McGraw-HillEducation,2010.												
Course Description												
<ul style="list-style-type: none"> 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 Level Maths & Physical Science						NIL						
required, elective, or selected elective (as per Table 5-1)												
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 making 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 Shafts and belts. Types of bearings and its applications. Introduction to CAD/CAM/CIM & Mechatronics.