

Course Number and Name													
BME504 - AUTOMOBILE ENGINEERING													
Credits and Contact Hours													
3&45													
Course Coordinator's Name													
Mr.R.Sabarish													
Text Books and References													
TEXT BOOKS:													
1. Kirpal Singh, Automobile Engineering, Vol 1 and 2 –Standard Publications, 2004.													
REFERENCES:													
1. R.B.Gupta, Automobile Engineering, Satya Prakashan, 2007.													
2. Ganesan. V."Internal Combustion Engines",TMH,2003													
3. K.K.Ramlingam,"Automobile Engineering", 2002.													
4. https://books.google.co.in/.../A_Text_Book_of_Automobile_Engineerin..													
Course Description													
To understand the construction and working principle of various parts of an automobile. To have the practice for assembling and dismantling of engine parts and transmission system													
Prerequisites							Co-requisites						
MANUFACTURING TECHNOLOGY I							MANUFACTURING TECHNOLOGY II, MACHINE DESIGN						
required, elective, or selected elective (as per Table 5-1)													
Required													
Course Outcomes (COs)													
CO1	Learn vehicle structures												
CO2	Students will learn the different types of engines												
CO3	Transmission systems will be learnt												
CO4	The students will learn about the engine auxiliary systems												
CO5	Students will learn about alternate fuels												
CO6	Students learn about suspension systems and steering wheels												
Student Outcomes (SOs) from Criterion 3 covered by this Course													
COs/SOs	a	b	c	d	e	f	g	h	i	j	k	l	
CO1	H	H	L					M	M		H	H	
CO2	H	H	L					M	M		H		
CO3								M			H	H	
CO4	H	M	L						M			H	
CO5	M	H						M	M		M	M	
CO6	M	H	L					M	M		M	M	

List of Topics Covered

UNIT I VEHICLE STRUCTURE AND ENGINES

9

Vehicle construction – Chassis, frame and body- Engine types-Construction-Operation-Turbo and Supercharger engine. Cylinder arrangements-Performance& balancing-engine locations-engine trouble shooting-Pollution norms-Catalytic converter-Indian &Euro emission standards.

UNIT II TRANSMISSION SYSTEMS

9

Clutches-types & Construction- fluid coupling-types-torque converter-Advantages-gear box-types-advantages-gear ratios-automatic transmissions-propeller shaft-universal joint-slip joint-Differential-rear axle. Brakes -Types-Mechanical, Hydraulic, Pneumatic, Power brake. Details of components.

UNIT III STEERING AND SUSPENSION SYSTEMS

9

Principle of steering-Steering geometry and wheel alignment-Steering linkages- Power steering-Wheel and tyres-Construction-Types and specification-Tyre wear and causes-Front and rear axle, Suspension Systems – Needs and Types-Springs-Torsion bar-Shock Absorber.

UNIT IV ENGINE AUXILLARY SYSTEMS

9

Carburetors-Electronic fuel injection systems-Single and multi points types-Principles of modern electrical systems-battery-Dynamo-Alternator-Starting motor-Lighting and ignition(Battery and Electric systems)-Automobile air conditioning.

UNIT V ALTERNATIVE FUELS

9

Alternative fuels-Hydrogen-Compressed natural gas(CNG)-Liquefied petroleum gas (LPG), Fuel cells, Electric hybrid vehicle.