

SVM Institute of Technology, Bharuch

Department of Mechanical Engineering

Syllabus: Mid Semester Examination (Even semester 2018-19)

BE – IV(8th Semester) **Name of Faculty:** Prof. V.Y.Gajjar

Subject Code: 2181915

Subject Name: Automobile Engineering

Sr. No.	Unit	Topics
1	Unit 1	Introduction to Automotive Systems Vehicle body classification and specification: Body construction type, Location of engine and Drive system types and arrangement, specification of vehicles; Functional requirements of vehicle body, Body trim and fittings, Overview of various systems including safety features, steering system types, Tire construction and types.
2	Unit 2	Body Load Analysis: Vehicle Loads: Static load, Load due to Acceleration and Braking, Moments and Torque due to driving conditions, resistance to motion and aerodynamic load, Types of materials used in body construction, Analysis and Selection of body member sections, Body sub frame and underfloor structure, car front and rear end structure,
3	Unit 3	Transmission and Driveline systems Constructional features and working of clutches*, Gear Train: sliding mesh, constant mesh and synchromesh gear boxes with related components, Propeller and drive shaft, universal joints, Rear wheel drive arrangements, Rear axle final drive, the differential, rear axle, Automatic Transmission and CVT.
4	Unit 4	Suspension, Steering and Braking systems Types of suspension systems, Functional requirements of suspension systems, Front suspension system and Steering: Types, Definitions for wheel orientation and its effect, Types and Constructional features of Front Suspension, Steering layout, types of steering gears, steering linkages, steering mechanism, definitions and significance of camber, caster and king pin inclination, toe in and toe out on turn, steering ratio, under steering and over steering, steering geometry; Rear suspension system: Brake system components and configurations, Fundamentals of braking: braking distance, braking efficiency.

Text Book(s): 1) Automobile Technology, N.K. Giri, Khanna Publishers, 2011.

2) Advanced Vehicle Technology by Heinz and Heisler

SVM Institute of Technology, Bharuch
Department of Mechanical Engineering.
Syllabus: Mid Semester Examination (Even semester 2018-19)
BE – IV (8th Semester) ME

Name of Faculty: Prof. Sumit Rathod, Prof. Nirmal Kumar

Subject Code: 2181910 **Subject Name:** RENEWABLE ENERGY
ENGINEERING

Sr. No.	Unit	Topics
1	Unit 1	Scenario of Renewable Energy (RE) Sources: Needs of renewable energy, advantages and limitations of RE, present energy scenario of conventional and RE sources
2	Unit 2	Solar Energy: Energy available from the sun, spectral distribution, solar radiation outside the earth's atmosphere and at the earth's surface, solar radiation geometry, Instruments for solar radiation measurements, empirical equations for prediction of availability of solar radiation, radiation on tilted surface
3	Unit 3	solar energy conversion into heat, types of solar collectors, evacuated and non-evacuated solar air heater, concentrated collectors, thermal analysis of liquid flat plate collector, air heater and cylindrical parabolic collector, solar energy thermal storage, heating and cooling of buildings, solar pumping, solar cooker, solar still, solar drier, solar refrigeration and air conditioning, solar pond, heliostat, solar furnace
4	Unit 4	Wind Energy: Energy available from wind, basics of lift and drag, basics of wind energy conversion system, effect of density, angle of attack and wind speed, windmill rotors, horizontal and vertical axes rotors, drag, lift, torque and power coefficients, tip speed ratio, solidity of turbine, wind turbine performance curves, wind energy potential and site selection, basics of wind farm

Text Book(s):

- 1) Solar Energy: Principles of Thermal Collection and Storage, S. P. Sukhatme and J. K. Nayak, McGraw- Hill Education
- 2) Solar Engineering of Thermal Processes, John A. Duffie, William A. Beckman, John Wiley, New York
- 3) Non-conventional energy resources, ShobhNath Singh, Pearson India

SVM Institute of Technology, Bharuch
 Department of Mechanical Engineering
 Syllabus: Mid Semester Examination (Even semester 2018-19)
 BE – IV(8th Semester) ME

Name of Faculty:J R SHAH, A M PATEL

Subject Code: 2181914

Subject Name:Rapid Prototyping

Sr. No.	Unit	Topics
1	Unit 1	<ul style="list-style-type: none"> ▪ Introduction to Prototyping, Traditional Prototyping Vs. Rapid Prototyping (RP), Classification of Rapid Manufacturing Processes: Additive, Subtractive, Formative. ▪ Generic RP process.
2	Unit 2	<ul style="list-style-type: none"> ▪ CAD model preparation, Data interfacing: formats (STL, SLC, CLI, RPI, LEAF). ▪ Data interfacing: formats (IGES, HP/GL, CT, STEP), conversation, validity checks, repair procedures. ▪ Part orientation and support generation, Support structure design Model Slicing algorithms and contour data organization. ▪ Direct and adaptive slicing, Tool path generation.
3	Unit 3	<ul style="list-style-type: none"> ▪ Process Physics, Tooling, Process Analysis, Material and technological aspects, Applications, limitations and comparison of various rapid manufacturing processes. ▪ Photo polymerization (Stereo lithography (SL), Micro stereo lithography), Electron Beam melting (EBM)), Extrusion-Based RP Systems (Fused Deposition Modelling. ▪ (FDM)), Sheet Lamination (Laminated Object Manufacturing (LOM).