

DME 601: AUTOMOBILE ENGINEERING

Credits: 4

Semester VI

Module No.	Contents	Teaching Hours
Unit - I	Introduction to Components of an automobile, Classification of automobiles, Layout of Chassis, Types of drives i.e. front wheel, rear wheel, four wheel, left hand, right hand; Transmission System; Clutch Function, Constructional details of single plate and multiple friction clutches, Centrifugal and semi centrifugal clutch, Gear Box Function, Working of slide mesh, constant mesh and synchromesh gear box, Torque convertor, Overdrive Propeller shaft and rear axle Function, Universal joint, Differential Rear axle drives and different types of rear axles Wheels & Tyres, Types of wheels, disc wheels and wire wheel, Types of tyre used in Indian vehicles, Causes of Tyre wear, Toe in, Toe out, Chamber, Caster, Kingpin inclination Tube less tyres	12
Unit - II	Steering System Function and principle, Ackerman and Davis steering gears Types of steering gears worm and nut, worm and wheel, worm and roller, Rack and pinion type. Constructional detail and working of mechanical, hydraulic and vacuum brake details of master cylinder, wheel cylinder Concept of brake drum, brake lining and brake equipment, Bleeding of brake, Brake efficiency, air brake, Independent Suspension System Function, Types Working of coil spring, leaf spring Shock absorber Battery Constructional details of lead and cell battery Specific gravity of electrolyte Effect of temperatures, charging and discharging on specific gravity Capacity and efficiency of battery ,Battery charging Maintenance of batteries, Checking of batteries for voltage, faults and specific gravity	12
Unit - III	Dynamo and Alternator, Dynamo Function and details Regulators voltage, current and compensated type Cutout Construction, working and their adjustment, Alternator Construction and working, Charging of battery from alternator,. Diagram of a Typical Wiring system, Lighting System and Accessories, Lighting system, Wining circuit, Head light aiming of headlights lighting switches, Direction indicator, Windscreen Wipers, Horn Speedometer, Heater Air conditioning, Wiring harness, panel lights, fog light, fuel gauge, pressure gauge, temperature gauge, types of horn, traffic rules, transport management	12

Reference Books:

1. Automobile I & II :- P.S. Gill –(S.K. Kataria)
2. Automotive Chassis - P.M. Heldt.
3. Mechanism of the car - A.W. Judge
4. Automotive mechanism - Joseph Heitner.
5. The Automobile - Harbansigh Reyat
6. Automotive Engineering - G.B.S. Narang
7. An introduction to Automobile - N.R. Khatawate Engineering

DME 602: INDUSTRIAL ENGINEERING

Credits: 4

Semester VI

Module No.	Contents	Teaching Hours
Unit - I	<p>Production and Productivity Production, productivity functions, productivity, factor affecting productivity, measurement of productivity, Causes of decrease in productivity, Difference between production and productivity.</p> <p>Plant Location, Layout and Job Evaluation Plant location, factor affecting plant location, Concept of plant layout, Types of layout and their characteristics, factor affecting plant layout, Definition of job evaluation, job evaluation methods such as ranking method, grade description method, Point system and factor comparison method, hybrid system.</p>	16
Unit - II	<p>Work Study Definition and scope of work study, area of application of work study in industry, role of work study in improving productivity, Objective, needs and method of work study, information collection, Recording techniques, process symbol, Charts and diagram, Critical examination, work measurement objectives, Needs and method of work measurement, Time & motion study, various allowances, Calculation of time, Work sampling, Standard data and its use.</p> <p>Production Planning and Control Introduction, Objectives and components (functions) of P.P.C., Advantages and stages of P.P.C., Process planning, routing, scheduling, Dispatching and follows up, Routing process, Route sheet, CPM/PERT techniques, drawing of simple networks and critical time calculation, Production Control in job order, Batch type and continuous types of production, difference between these controls.</p>	16
Unit - III	<p>Estimation and Costing Introduction, Purpose/ Functions of estimating, Costing concept, Ladder and elements of cost. Difference between estimation and costing, Overheads and their types, Estimation of material cost, Estimation of cost of machining process, numerical problems, Bonus & Incentive to workers</p> <p>Introduction of Statistics Basic statistical concept, Histogram, Frequency, Mean, Mode, Standard deviation</p>	16

Reference Books-

1. Industrial Engineering and Management by TR Banga.
2. Industrial Engineering and Management by OP Khanna, Dhanpat Rai Publications, Delhi.
3. Industrial Organization and Management by Tara Chand, Nem Chand and Brothers, Roorkee.
4. Industrial Engineering by S.C.Sharma; Khanna Publisher.

DME 603: CNC MACHINE TECHNOLOGY
Semester VI

Credits: 4

Module No.	Contents	Teaching Hours
Unit - I	Concepts and features of NC systems, Classification of NC systems, Design considerations of NC machine tools, Constructional features of CNC machine tools, Functions of MCU	16
Unit - II	Machining center, turning center, CNC EDM, Ball screws, Bearings, Centralized lubrication systems. Manual part programming, Preparatory, Miscellaneous functions, Sinumeric, FANUC controls, Computed aided part programming, Post processors, APT programming, CNC programming based on CAD	16
Unit - III	Feedback devices, tooling for CNC machine, Interpolators. Point-to-point and contouring systems, Adaptive control, ACO and ACC systems, Maintenance of CNC Machines, Economics of manufacturing using CNC machines	16

Reference Books-

1. Koren, Y. "Computer Control of Manufacturing Systems", McGraw Hill Book co. New Delhi, 1986
2. Radhakrishnan P., "Computer Numerical Control Machines", New Central Book Agency, Calcutta, 1992
3. Kundra T. K., Rao P. N., and Tiwari N. K., "CNC and Computer Aided Manufacturing", Tata McGraw Hill, New Delhi, 1991. 3.Fitzpatric,M. " Machining And CNC Technology" , McGraw-Hill College, 2004

DME 604: POWER PLANT ENGINEERING

Credits: 4

Semester VI

Module No.	Contents	Teaching Hours
Unit – I	<p>Thermal Power Plants <i>Introduction- power and energy, sources of energy</i> Basic thermodynamic cycles, various components of steam power plant layout pulverized coal burners- Fluidized bed combustion-coal handling system sash handling systems- Forced draft and induced draft fans- Boilers-feed pumps super heater regenerator-condenser- de-aerators-cooling tower</p>	14
Unit – II	<p>Hydro Electric Power Plants Layout-dams-selection of water turbines-types-pumped storage hydro plants Gas and Diesel Power Plants Types, open and closed cycle gas turbine, work output & thermal efficiency, methods to improve performance-reheating, inter-cooling, regeneration advantage and disadvantages- Diesel engine power plant-component and layout</p>	18
Unit - III	<p>Non Conventional Power Generation Solar energy collectors, OTEC, wind power plants, tidal power plants and geothermal resources, fuel cell, MHD power generation-principle, thermoelectric power generation, thermionic power generation Nuclear Power Plants Principles of nuclear energy- Fission reactions-nuclear reactor-nuclear power plants</p>	16

Reference Books:

1. A Course in Power Plant Engineering by Arora and Domkundwar, Dhanpat Rai and Co. Pvt. Ltd., New Delhi.
2. Power Plant Engineering by P.K. Nag, Tata McGraw Hill, Second Edition, Fourth reprint 2003.
3. Power station Engineering and Economy by Bernhardt G.A. Skrotzki and William A. Vopat Tata McGraw Hill Publishing Company Ltd., New Delhi, 20th reprint 2002.
4. An introduction to power plant technology by G.D. Rai Khanna Publishers, Delhi - 110 005.
5. Power Plant Technology, M.M. El-Wakil McGraw Hill 1984.



DME 606: ENTREPRENEURSHIP DEVELOPMENT & MANAGEMENT

Credits: 4

Semester VI

Module No.	Contents	Teaching Hours
Unit - I	Concept and meaning of entrepreneurship. need of entrepreneurship in context of prevailing employment conditions of the country. Successful entrepreneurship and training for its development, entrepreneurship as a desirable and feasible career option- entrepreneur competencies and attributes- characteristics of a successful entrepreneur. Process of entrepreneurship development	12
Unit - II	Nature, Purpose and pattern of Human Activities: Economic and Non-Economic- Entrepreneurial Pursuits and Human Activities- Need for Creativity and innovation in societies -Building enterprising Personality and Society - Entrepreneurship as a Human Resource Development concept	12
Unit - III	Role of Entrepreneur in Indian economy with reference to self-employment development Employment pattern of the educated in India- Entrepreneurial Culture- Importance of nursing Entrepreneurial culture in developing economies Entrepreneurial Values- Entrepreneurial Discipline and Social Responsibilities, Entrepreneurship Support system as like District Industry Centers (DICs), Commercial Banks, state financial corporations,	12

Reference Books:

1. A Hand book of Entrepreneurship, Edited by BS Rathore and JS Saini, Aapga publications, Panchkula Haryana.
2. Entrepreneurship Development By CB Gupta and P Shrinivasan, Sultan chand and sons, New Delhi.
3. Dynamics of Entrepreneurship development and management (ivth) edition by Shri Vsant Desai.
4. Entrepreneurship development by Shri S.S. Khanka.
5. Entrepreneurship by NITTT& R Chennai



DME 651: AUTOMOBILE ENGINEERING LAB.

Credits: 2

Semester VI

Module No.	Contents	Teaching Hours
1.	Study and sketch of i. Battery Ignition System ii. Magnetic Ignition System	24
2.	Study and Sketch of i. Radiator ii. Water Pump iii. Oil Pump iv. Shock Absorber	
3.	Study and sketch of i. A. C. Pump ii. S. V. Pump iii. Master Cylinder	
4.	Study and sketch of i. Rear axle ii. Differential iii. Steering System	
5.	Checking and setting of ignition on timing using timing light for advance and retard	
6.	Fault finding practice of an automobile vehicle four wheelers (Petrol and Diesel vehicle)	
7.	Charging of Automobile battery and measuring cell voltage and specific gravity of Electrolyte	
8.	Determination of gear ratio of an auto engine tachometer/stroboscope.	
9.	Cleaning and adjustment a carburetor.	
10.	Changing of wheels and checking the alignment of wheels.	

DME 605: AUTOMOBILE SERVICING, MAINTENANCE AND REPAIR

Credits: 4

Semester VI

Module No.	Contents	Teaching Hours
	Engine Maintenance & Repairing Maintenance & maintenance schedule, Routine Maintenance schedule for petrol engine and diesel engine, lubricating chart, cleaning and adjustment,	

Unit - I	preventive maintenance, trouble shooting for faults in engines, overhauling of engines, Adjusting the engine timing, Maintenance and adjustment of carburetor and fuel injection pump, Checking the valve clearance and adjustment, valve grinding and lapping, engine tuning, repairing Process, Cylinder rebooting and relieving, Removal of liners and fitting, inspection-repair and fitting of valve and valve guides, checking the connecting rod for bending and connecting rod alignment, inspection of crank shaft for ovality and regrinding	12
Unit - II	<p>Repair & Maintenance of Radiator & Lubricating System Radiator repair and maintenance, Maintenance of lubricating system, Flushing the lubricating system, Change of used lubricating oils, clearing and fitting of oil filter lubrication of water pump, grades of oils, multi grade oil, additives for improving the quality of oil. Chassis Repair and Maintenance Grease and greasing points requiring greasing, specifications of greases to be used for different parts, repair of tyres and tubes, greasing of wheel bearing, rotating schedule for front and rear tyres, bleeding of brakes, pedal play adjustment in clutch and brakes, adjustment, change of brake lining</p> <p>Electrical System Repair & Maintenance Starter trouble, shooting and suggesting remedies, removal of starter from engine, repairing the starter, bushes and bushes replacement, checking of armature for short circuit, cleaning of commentators, checking, repairing of starter drive reassembly and testing of starter, dynamo, lubricating the dynamo, changing the bushes, checking and turning the electrical horn</p>	12
	<p>Repair & Maintenance of Vehicle Air Conditioning System Testing and Charging of Air Conditioner, care & electrical components, noise level system, fresh air allowance, primary & secondary circuit, heat exchanger, cooling & dehumidifying coil, care & servicing-Air control unit, temperature control unit, magnet clutch, condenser, fan assembly, Evaporator, relays, expansion valve, filters and three way solenoid valve,</p>	

Reference Books:

1. Singh Kirpal, Automobile Engineering Vol I & II, Standard Publishing E.R.S. & Distributors.
2. Poonia M.P., Objective I.C. Engines & Automobile Engineering, Standard Publishing

DME 607: ADVANCE PRODUCTION TECHNOLOGY

Credits: 4

Semester VI

Module No.	Contents	Teaching Hours
Unit - I	<p>Production Machine Tools: Machine tools used for quantity production, Semi automatic multi tools centre lathe, Auto lathes- Single spindle automatics, Sliding head types, Single spindle automatics, Multispindle automatics, Ultra high speed machining, External centreless grinding, Internal centreless grinding, Hydraulic servo copying systems for lathe, Electric copying systems, special purpose machines - Brake Drum Turning Lathe.</p>	12
Unit - II	<p>Production of plastic - Polymers, Thermo plastics, Moulding of thermoplastic, Extrusion process, Sheet forming process, Machining of thermoplastics, Thermosetting Plastics, Moulding of Thermosetting plastics</p> <p>Plastic Moulding Techniques Injection moulding – working principle, advantages and limitations, Blow moulding – working principle, advantages and limitations, Compression moulding – working principle, advantages and limitations</p>	12
Unit - III	<p>Cutting tools for machining - Elementary theory of metal cutting, Single point tools- Basic angles. Chip formation and their classification, basic mechanism of chip formation, geometry of chip formation, forces on chip, Tool material, Tool wear and Tool life, Taylor's tool life equation. Properties of tool materials. Surface treatment of cutting tools- Its advantage, Tin coated high speed steel, diamonds, Cubic boron nitrides.</p> <p>Press tools - Elements of Press tools, Factors affecting press tool design. Shearing, Bending, and Drawing operation, combination, progression and compound die, Rubber die forming.</p>	12

Reference Books:

1. Amitabh Ghosh , Mallik Manufacturing Science East-West Press Pvt. Ltd. HMT, Bangalore
2. Production Technology Tata Mc-Graw Hill Pabla B. S. , M. Adithan
3. Industrial maintenance S. Chand & Co. Ltd. P. K. Mishra
4. Non conventional Machining Narvasa Publishing House , Lindley R. Higgins

