B. Tech. VIIIth Semester Mechanical Engineering

LECTURE PLAN

Automobile Engineering

ME-402N

Month	Class	Topic/Chapter Covered	Academic Activity	Test/Assignment
Jan.	8th Semester	Brief history of automobiles, Main components of an automobile, Brief description of each component	Teaching	
Jan.	8th Semester	Brief description of constructional details and working of a four stroke I.C. Engine	Teaching	
Jan.	8th Semester	S.I. Engines and C.I. Engines including lately developed overhead cam shaft	Teaching	
Jan.	8th Semester	Multi-cylinder engines, Introduction to recent developments in I.C Engine	Teaching	
Jan.	8th Semester	Direct injection systems, Multi-point fuel injection systems	Teaching	
Jan.	8th Semester	Introduction, Brief description of different components of Transmission System.	Teaching	
Jan.	8th Semester	Introduction to Clutch and its different types	Teaching	
Jan.	8th Semester	Principle of Friction Clutch, Clutch Lining and friction materials used in Friction Clutches	Teaching	
Jan.	8th Semester	Torque transmitted, Brief description of Cone Clutch, Single Plate and Multiplate Clutches	Teaching	Assignment
Jan.	8th Semester	Dry and wet clutches, Automatic clutch action ,Centrifugal clutches	Teaching	
Jan.	8th Semester	Electromagnetic clutches, Fluid Flywheel	Teaching	
Feb.	8th Semester	Gear Box Air resistance, Gradient resistance and rolling resistance coming across a moving automobile	Teaching	
Feb.	8th Semester	Tractive effort, Variation of tractive effort with speed	Teaching	
Feb.	8th Semester	Performance curves (object and need of a gear box), Sliding mesh gear box	Teaching	
Feb.	8th Semester	Control mechanism, Sliding type selector mechanism, Ball type selector mechanism	Teaching	
Feb.	8th Semester	Steering column gear shift control, Constant mesh gear box	Teaching	
Feb.	8th Semester	Synchromesh device, Automatic transmission in general, AP automatic gear box	Teaching	
Feb.	8th Semester	Torque converter, Torque converter with direct drive, Lubrication of Gear Box	Teaching	
Feb.	8th Semester	Functions and requirements of a propeller shaft, Universal Joint	Teaching	

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March	8th Semester	Constructional forms of universal joints, Flexible-ring joints	Teaching	
March	8th Semester	Rubber-bushed flexible joints. Constant-velocity joints	Teaching	
March	8th Semester	Principle operation of Differential, Constructional details of a typical Differential unit	Teaching	
March	8th Semester	Multi-plate clutch type traction control device, Brake Functions and methods of operation, Brake efficiency	Teaching	
March	8th Semester	Elementary theory of shoe brake & shoe adjustments, A modern rear-wheel brake	Teaching	
March	8th Semester	Disc brakes, Brake linkages, Leverage and adjustment of the brake linkage	Teaching	
March	8th Semester	Servo- and power operated brakes, Vacuum brake operation	Teaching	
March	8th Semester	Hydraulic Brakes-constructional details and working, Direct action vacuum servos, Power-operated brakes	Teaching	Assignment
March	8th Semester	A dual power air brake system, Suspension principles, Road irregularities and human susceptibility	Teaching	
March	8th Semester	Suspension system, Damping, Double tube damper, Single tube damper, Lever arm type damper, Springs-Leaf springs, Coil and torsion springs	Teaching	
March	8th Semester	variable rate springs, Composite leaf springs, Rubber springs, Air springs, Adjustable and self-adjusting suspensions	Teaching	
April	8th Semester	Interconnected air and liquid suspensions, Independent suspension system, Different independent suspension layouts	Teaching	
April	8th Semester	Steering Geometry -Castor, Camber, Kingpin inclination, Combined angle, Toe-in, Steering system-basic aims, Ackerman linkage	Teaching	
April	8th Semester	Steering linkages for independent suspension, Center point steering, Co-starring or trailing action	Teaching	
April	8th Semester	Cornering power, Self-righting torque, Steering characteristics-over steer and under steer, Axle beam	Teaching	
April	8th Semester	Stub-axle construction, Steering column, Reversible and irreversible steering, Rack-and-pinion steering mechanism	Teaching	
April	8th Semester	Effect of toe-in on steering, Power steering, Vickers System	Teaching	
April	8th Semester	Emission control through catalytic converter, Double catalytic converter, Aspects of pollution control in Automobiles	Teaching	

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Lecture Plan

Foundry Engineering

ME-422N

Month	Class	Topic/Chapter Covered	Academic Activity	Test/Assignment
Jan.	8th Semester	Introduction to metal casting and foundry industry in modern industrial scenario	Teaching	
Jan.	8th Semester	Advantages and limitations of casting methods	Teaching	
Jan.	8th Semester	Classification of foundries. Different sections in a foundry and their functions.	Teaching	
Jan.	8th Semester	Important cast metals and alloys-their composition, properties and uses.	Teaching	
Jan.	8th Semester	Types of patterns, brief classification of pattern making materials	Teaching	
Jan.	8th Semester	Consideration in selection of pattern materials	Teaching	
Jan.	8th Semester	Color coding, pattern allowances, core boxes, types of core boxes	Teaching	
Jan.	8th Semester	Ingredients of common type of moulding and core making sands	Teaching	
Jan.	8th Semester	Core making sands, their properties and behavior, testing of sands and clay	Teaching	
Jan.	8th Semester	Classification of molding processes and casting processes	Teaching	
Jan.	8th Semester	Brief description of all processes such as green sand dry sand, loam sand floor	Teaching	Assignment
Feb.	8th Semester	Pit and machine molding	Teaching	
Feb.	8th Semester	Shell molding, CO_2 silicate process	Teaching	
Feb.	8th Semester	Investment casting process, permanent moulding process	Teaching	
Feb.	8th Semester	Gravity and pressure die casting	Teaching	
Feb.	8th Semester	Centrifugal casting process	Teaching	
Feb.	8th Semester	Classification, basic consideration in gating design	Teaching	
Feb.	8th Semester	Gating ratio, gating practice for ferrous and nonferrous alloys, pouring equipment	Teaching	

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Feb.	8th Semester	Function of riser, directional and progressive solidification	Teaching	Assignment
March	8th Semester	Centerline feeding resistance, riser efficiency	Teaching	
March	8th Semester	Riser design consideration, risering curves	Teaching	
March	8th Semester	Cain's, N.R.L and modulus method	Teaching	
March	8th Semester	Feeding distance feeding aids, blind and atmospheric risers.	Teaching	
March	8th Semester	Melting of cast iron, Mechanical features of cupola	Teaching	
March	8th Semester	Operational steps of cupola operation	Teaching	
March	8th Semester	Principles of cupola operation	Teaching	
March	8th Semester	Advanced practices in the cupola operation	Teaching	
March	8th Semester	Melting of aluminum based alloys	Teaching	
March	8th Semester	Mold treatments of aluminum based alloys such as dressing	Teaching	
March	8th Semester	Grain refining, and modification of copper based alloys	Teaching	Assignment
April	8th Semester	Melting of copper based alloys	Teaching	
April	8th Semester	Mold treatments of copper based alloys such as dressing	Teaching	
April	8th Semester	Grain refining, and modification of copper based alloys	Teaching	
April	8th Semester	Casting defects, their causes and remedies	Teaching	
April	8th Semester	Shop floor quality control tests such as composition control	Teaching	
April	8th Semester	Wedge test, fluidity, temperature measurement	Teaching	
April	8th Semester	Casting Modification by different methods like Friction stir processing	Teaching	Assignment

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LECTURE PLAN

MANUFACTURING MANAGEMENT

ME-426N

Month	Class	Topic/Chapter Covered	Academic Activity	Test/Assignment
Jan.	8th Semester	Introduction, Historical evolution of production and operation management	Teaching	
Jan.	8th Semester	Concept of Production	Teaching	
Jan.	8th Semester	Production system	Teaching	
Jan.	8th Semester	Production Management	Teaching	
Jan.	8th Semester	Operation system	Teaching	
Jan.	8th Semester	Operation management	Teaching	
Jan.	8th Semester	Managing global operation	Teaching	
Jan.	8th Semester	Scope of production & operation management	Teaching	Assignment
Jan.	8th Semester	Introduction and Meaning, Need for Selecting a Suitable Location	Teaching	
Feb.	8th Semester	Factors influencing Plant location, Plant location	Teaching	
Feb.	8th Semester	Location theories	Teaching	
Feb.	8th Semester	Location models, Location economics	Teaching	
Feb.	8th Semester	Plant layout, Classification of layout	Teaching	
Feb.	8th Semester	Design of Product layout, Design of Process layout	Teaching	
Feb.	8th Semester	Service layout, Organization of physical facilities.	Teaching	Assignment

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Feb.	8th Semester	Introduction, Objectives of Material Handling, Principles of Material Handling	Teaching	
March	8th Semester	Selection of Material Handling Equipment, Evaluation of Material Handling System, Material Handling Equipment	Teaching	
March	8th Semester	Guidelines for Effective Utilization of Material Handling Equipment	Teaching	
March	8th Semester	Relationship Between Plant Layout and Material Handling	Teaching	
March	8th Semester	Scope and Function of Material Management	Teaching	
March	8th Semester	Material Planning and Control, Inventory Control	Teaching	
March	8th Semester	Standardization, Simplification	Teaching	
March	8th Semester	Ergonomics	Teaching	
March	8th Semester	Just-in-Time(JIT) Manufacturing	Teaching	Assignment
March	8th Semester	Introduction, Reasons for Generation and Accumulation of Obsolete	Teaching	
April	8th Semester	Surplus and Scrap Items, Identification and Control of Waste	Teaching	
April	8th Semester	Disposal of Waste	Teaching	Assignment
April	8th Semester	Introduction, Types of Automation	Teaching	
April	8th Semester	Computer Integrated Manufacturing	Teaching	
April	8th Semester	Reasons for Automation, Advantages and Disadvantages of Automation, Automation Strategies	Teaching	
April	8th semester	Automated Flow Lines, Automated Guided Vehicles System	Teaching	
April	8th semester	Automated Storage/Retrieval System.	Teaching	

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LECTURE PLAN

Power plant Engineering

ME-404N

Month	Class	Topic/Chapter Covered	Academic Activity	Test/Assignment
Jan.	6th Semester	Conventional and non conventional sources of energy,geothermal power plants	Teaching	
Jan.	6th Semester	Tidal power plants,windmills,solar power plants	Teaching	
Jan.	6th Semester	Solar thermal and solar photovoltaic	Teaching	
Jan.	6th Semester	Direct energy conversion systems,Energy sources in india,Recent development in power plants	Teaching	
Jan.	6th Semester	Hydrology,rainfall and runoff	Teaching	
Jan.	6th Semester	Hydrographs and flow duration curves	Teaching	
Jan.	6th Semester	Site selection for hydro power plants and classification of hydro power plants	Teaching	
Jan.	6th Semester	Storage type hydro power plant and its operation,Estimation of power availability	Teaching	
Jan.	6th Semester	Selection of water turbines.combination of hydroplants with steam plants.	Teaching	
Jan.	6th Semester	Advantages and disadvantages of hydropower plants	Teaching	
Jan.	6th Semester	Applictions of diesel engine in power field,Advantages and disadvantages of diesel plants over thermal power plants	Teaching	
Feb.	6th Semester	Schematic arrangement of diesel engine power plant,Different systems of diesel power plants	Teaching	
Feb.	6th Semester	Perforformance characteristics of supercharging,layout of diesel engine power plant	Teaching	
Feb.	6th Semester	Gas turbine cycles,the ideal brayton cycle and the non ideal brayton cycle	Teaching	

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Feb.	6th Semester	Modification of the brayton cycle,Gas turbine characteristics	Teaching	
Feb.	6th Semester	Combined cycles with heat recovery boiler.TheSTAG Combined cycle power plant	Teaching	
Feb.	6th Semester	Combined cycle with multipresssure ,Combined cycle for nuclear power plants	Teaching	
Feb.	6th Semester	The carnot,The ideal rankine cycle,externally irreversible rankine cycle	Teaching	
Feb.	6th Semester	Superheat,Reheat,Regeneration,Internally irreversible rankine cycle	Teaching	
March	6th Semester	Open feed water heaters,closed type feed water heaters,Typical layout of steam power plant,efficiency and heat rate	Teaching	
March	6th Semester	Introduction to steam generators,Steam generator control,Fluidized bed boilers	Teaching	
March	6th Semester	Modern high pressue boilers,super critical boilers,ultra supercritical technology,advancaed ultra super critical technology,flue gas de nitrification and desulphurization	Teaching	Assignment
March	6th Semester	Fabric filters and bag houses,feed water treatment,boiler blowdown,steam purity	Teaching	
March	6th Semester	Basic theory and terminology,Nuclear fission and fusion processes	Teaching	
March	6th Semester	Fission chain reactions,Moderation,Fertile materials	Teaching	
March	6th Semester	Nuclear fuels,General componenents of nuclear reactor	Teaching	
March	6th Semester	Different types of reactors PWR,BWR,GCR etc.	Teaching	
March	6th Semester	Indias nuclear power programme,disposal of nuclear waste and related issues	Teaching	
March	6th Semester	Introduction to economics of power generation	Teaching	
March	6th Semester	Different terms and definitions	Teaching	
April	6th Semester	Selection of power plant equpment	Teaching	
April	6th Semester	Factors affecting economics of generation and distribution of power	Teaching	

April	6th Semester	Performance and operating characteristics of power plants,Economic load sharing	Teaching	
April	6th Semester	Tariff for electrical energy	Teaching	

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LECTURE PLAN

Month	Class	Topic/Chapter Covered	Academic Activity	Test/Assignment
Jan.	8th Semester	Definition of Quality, Quality function	Teaching	
Jan.	8th Semester	Dimensions of Quality, Brief history of quality methodology	Teaching	
Jan.	8th Semester	Statistical methods for quality improvements	Teaching	
Jan.	8th Semester	Quality costs, Introduction to Quality function deployment.	Teaching	
Jan.	8th Semester	Introduction, Definition, Management principles in QA	Teaching	
Jan.	8th Semester	. Forms of QA, QA in different stage	Teaching	
Jan.	8th Semester	Quality planning, QA program	Teaching	
Jan.	8th Semester	Quality in material management, Vendor selection & development	Teaching	
Jan.	8th Semester	Introduction to statistical process control, Concept of variation	Teaching	
Jan.	8th Semester	Assignable & Chance causes, Attributes & variables	Teaching	
Jan.	8th Semester	Attributes & variables, Frequency distribution curve & its types	Teaching	
Feb.	8th Semester	Problems on FD curve & ND curve	Teaching	
Feb.	8th Semester	Definition, Formulae	Teaching	
Feb.	8th Semester	its problems	Teaching	
Feb.	8th Semester	. Control chart patterns	Teaching	
Feb.	8th Semester	Process capability	Teaching	
Feb.	8th Semester	Process capability	Teaching	
Feb.	8th Semester	Process capability Process capability	Teaching	
Feb.	8th Semester	Definition for control chart for attributes	Teaching	

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March	8th Semester	Formulae & its problems	Teaching	
March	8th Semester	. Problems on p, c charts.	Teaching	
March	8th Semester	Choice between variables and attributes control charts	Teaching	
March	8th Semester	Guidelines for implementing control charts.	Teaching	
March	8th Semester	Sampling: Definition, types of sampling	Teaching	
March	8th Semester	importance, benefits and limitations of sampling	Teaching	
March	8th Semester	Average Outgoing Quality Curve	Teaching	
March	8th Semester	Operating Characteristic Curve	Teaching	
March	8th Semester	Errors in Making Inferences from Control Charts (Type I and II errors). Introduction of Reliability concepts	Teaching	
March	8th Semester	Failure density, Probability of failure, ,	Teaching	
March	8th Semester	Reliability of series and parallel connected systems and examples, Logic diagrams,	Teaching	
April	8th Semester	Improvement of system reliability, Element Redundancy,	Teaching	
April	8th Semester	Unit redundancy, Standby redundancy	Teaching	
April	8th Semester	Unit redundancy, Standby redundancy	Teaching	
April	8th Semester	Mortality rate, Mean time to failure	Teaching	
April	8th Semester	Unit redundancy, Standby redundancy	Teaching	