SVKM's Narsee Monjee Institute of Management Studies

Mukesh Patel School of Technology Management & Engineering

Program: B.Tech.(Mechanical)				**Semester :** IV	
Course/Module : Numerical & Statistical Methods				**Module Code :** BTME04008	
Teaching Scheme				**Evaluation Scheme**	
Lecture (Hours per week)	**Practical (Hours per week)**	**Tutorial (Hours per week)**	**Credit**	**Internal Continuous Assessment (ICA) (Marks - 50)**	**Term End Examinations (TEE) (Marks- 100 in Question Paper)**
3	0	1	4	Marks Scaled to 50	Marks Scaled to 50

Pre-requisite: Fundamentals of calculus and algebra, Probability Theory.

Objectives:

1. To develop knowledge of standard statistical and Numerical techniques and application to problems in day to day life involving areas of uncertainty such as inventory, maintenance, quality, resource availability, demand, computation and decision making .

Course Outcomes:

After completion of the course, students would be able to :

1. Solve algebraic, transcendental and differential equations using numerical methods; Estimate and analyze errors in the numerical solution.
2. Implement appropriate techniques of differentiation, integration, interpolation and curve fitting to discrete numerical data.
3. Evaluate correlation and regression coefficients, apply suitable statistical testing techniques and interpret the results.
4. Apply the knowledge of statistical methods and Numerical Techniques to solve real life problems.

Detailed Syllabus:

Unit	Description	Duration
1.	**Errors in Numerical Computation:** Types of Errors, Analysis and Estimation of Errors, General Error Formula, Errors in Taylor's Series for Approximation of Functions.	3
2.	**Roots of Equations:** Bisection method, False position method, Newton-Raphson method, Secant method.	5
3.	**Systems of Linear Algebraic equations:** Gauss-Elimination method, Gauss-Jordan method, Gauss-Seidel method.	4
4.	**Interpolation and Curve fitting:** Forward, Backward and Central Differences, differences of a polynomial, Newton's Interpolation formulae, Stirling's Central Difference interpolation formula, Lagrange's formula for unequal intervals.	7

	Least square method for straight line and parabola, Method of group averages.	
5.	**Numerical differentiation:** Derivative using Newton's forward difference and backward difference interpolating formula.	3
6.	**Numerical Integration:** Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule.	2
7.	**Solution to Ordinary differential equations:** Taylor series method, Euler's method, Runge-Kutta methods.	4
8.	**Testing of hypothesis:** Null and Alternate hypothesis, Test Statistic, Type I and Type II errors, One-tailed and two-tailed test, Critical region, Large sample statistical test for mean, Large sample statistical test for proportion, t-test for small samples, Chi-square test for Goodness of fit and independence of attributes.	9
9.	**Linear correlation and regression:** Scatter diagram, Positive vs. negative correlation, correlation and causation, Pearson product moment coefficient of correlation, regression line, Estimation of regression coefficients.	8
	Total	**45**

Text Books:

1. Steven C. Chapra, Raymond P. Canale, "Numerical Methods for Engineers", *Tata Mc-Graw Hill, 6th Edition*, 2010.
2. S.P. Gupta, "Statistical Methods", *Sultan Chand & Sons Publication, 35th Edition, 2007.*

Reference Books:

1. S.S. Sastry, "Introductory methods of numerical analysis ", *PHI Learning Private Limited, 5th Edition*, 2013.
2. T. Veerarajan, "Probability, Statistics and Random Processes", *McGraw-Hill Education, 3rd Edition, 2017.*
3. Irwin Miller, John E. Freund and R.A. Johnson, "Probability & Statistics for Engineer", *PHI, 7th Edition, 2000.*

Details of Internal Continuous Assessment (ICA)
Test Marks : 20
Term Work Marks : 30
Details of Term work: As per Institute norms.

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Program: B. Tech (Mechanical Engineering)				**Semester:** IV	
Course/Module: Strength of Materials				**Module Code:**BTME04009	
Teaching Scheme				**Evaluation Scheme**	
Lecture (Hours per week)	**Practical (Hours per week)**	**Tutorial (Hours per week)**	**Credit**	**Internal Continuous Assessment (ICA) (Marks-50)**	**Term End Examinations (TEE) (Marks -100 in Question Paper)**
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50

Pre-requisite: Engineering Mechanics (BTME03009)

Objectives:

- To impart knowledge of the deformable bodies subjected to different types of loads
- To determine the failure criteria of a body subjected to various stresses
- To understand the concepts of deformations and identify the different tests to be performed on materials

Outcomes:

After completion of the course, students would be able to:

- Understand the resultant stresses induced.
- Evaluate the deformations of various determinate beams.
- Analyse pressure vessels and power transmission systems for stability.

Detailed Syllabus: (per session plan)

Unit	Description	Duration
1	**Stress and Strain:** Strain, modulus of elasticity, modulus of rigidity, bulk modulus, yield stress, ultimate stress, factor of safety, shear stress, Poisson's ratio, analysis of members made of composite materials.	06
2	**Internal Forces & Stresses in Beams** **2.1 Shear Force and Bending Moment:** Axial force, shear force and bending moment diagrams for statically determinate beams for different types of loading. 2.2 **Simple Theory of Bending**: Flexure formula for straight beams, simple problems involving application of flexure formula, section modulus, moment of resistance of a section. 2.3 **Shear Stress in Beams:** Distribution of shear stress across plane sections used commonly for structural purposes.	17
3	**Simple Theory of Torsion:** Torsion of circular shafts – solid and hollow, stresses in power transmission shafts (including shafts in series and parallel).	04
4	**Bending Moment Combined with Axial Loads:** Application to members subjected to eccentric loads, core of a section, problems on chimneys involving lateral loads.	05
5	**Principal Stresses:** General equations for transformation of stress, stress on an oblique plane of a member subjected to General two directional	05

	stress systems. Principal planes and principal stresses, maximum shear stress Mohr's circle concept.	
6	**Deflection of Beams:** Deflection of cantilevers, simply supported and overhanging beams using double integration and Macaulay's methods for different types of loading.	05
7	**Thin Shells:** Stresses in thin cylindrical and spherical shells subjected to internal pressure. Efficiency of Rivetted Joints.	03
	Total	**45**

Text Books:

1. James M. Gere, Barry J. Goodno (2012), "Mechanics of Materials – SI Edition", *Cengage Learning*.
2. Ferdinand P. Beer, .E Russell Johnson Jr. John T. De Wolf (2008), "Mechanics of Materials", 3rd Edition, *Tata McGraw Hill*.

Reference Books:

1. Andrew Pytel, Jaan Kiusalaas (2011), "Mechanics of Materials", 2nd Edition, *Cengage Learning*.
2. William Nash, Merle Potter (2010), "Schaum's Outline of Strength of Materials, Fifth Edition", *McGraw Hill Professional*

Any other information: Nil

Details of Internal Continuous Assessment (ICA)
Test Marks: 20
Term Work Marks: 30

Details of Term Work:
Term work should consists of the following

1.Minimum 8 experiment from the list below:

- Universal Testing Machine
- Single Shear Test on UTM
- Double Shear Test on UTM
- Transverse Test
- U-Bend Test
- Tensile Tests
- Torsion Test
- Central Point Deflection
- Two Point Deflection
- Compressive Strength

3. Minimum three assignments covering the syllabus.

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Program: B. Tech (Mechanical Engineering)				**Semester:** IV	
Course/Module: Fluid Mechanics				**Module Code:** BTME04010	
Teaching Scheme				**Evaluation Scheme**	
Lecture (Hours per week)	**Practical (Hours per week)**	**Tutorial (Hours per week)**	**Credit**	**Internal Continuous Assessment (ICA) (Marks-50)**	**Term End Examinations (TEE) (Marks -100 in Question Paper)**
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50
Pre-requisite: Mathematics III (BTME03008) & Engineering Mechanics (BTME03009)					

Objectives:

- To develop a fundamental in analytical and practical Fluid mechanics.
- To impart knowledge of different types of fluid flows and boundary layers

Outcomes:

After completion of the course, students would be able to:

- Understand fluid properties and their static- dynamic nature.
- Analyze fundamental behavior of incompressible fluid.
- Understand and evaluate the fundamental behaviour of laminar and turbulent flow and boundary layer theory to solve real life problems.

Detailed Syllabus: (per session plan)

Unit	Description	Duration
1	**Fluid Properties:** Concept of continuum, fluid properties, Classification of fluid, Newton's law of viscosity, stress-strain relationship.	03
2	**Fluid Statics**: Basic hydrostatic equation, Pascal's Law, application to Manometers and mechanical gauges, hydrostatic forces on plane and curved submerged surfaces. **Buoyancy and Floatation:** Archimedes' Principle, buoyancy force and centre of buoyancy, metacentre, metacentric height, analytical method to find metacentric height, condition of equilibrium of submerged bodies, oscillation of a floating body	10
3	**Fluid Kinematics:** Description of fluid motion-Lagrangian method and Euler's method, classification of flow types- steady and unsteady, uniform and non-uniform, laminar and turbulent, one two and three- dimensional flow, rotational and irrotational, laminar and turbulent, compressible and incompressible. Flow patterns- stream lines, path lines, stream tubes and streak lines. Continuity equation (Cartesian and polar co-ordinates), circulation and vorticity, velocity potential and stream function.	08
4	**4.1 Fluid Dynamics:** Euler's equation of motion, Bernoulli's equation and its applications-venturimeter, orificemeter,	09

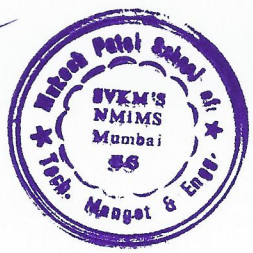
	rotameter, pitot tube, Impulse-Momentum equation and its applications, Reynolds Transport Theorem and its application. **4.2 Dimensional Analysis:** Secondary or derived quantities, Reyleigh method, Buckingham–πtheorem, dimensionless numbers, Theory of similarity, Model laws.	
5	**5.1 Laminar Flow:** Navier-Stokes equation of motion, developing expression for flow rate, pressure drop, shear stress, friction factor. Flow of viscous fluid in circular pipes- Hagen Poiseuille law, Couette flow. **5.2 Turbulent Flow**: Shear stresses in turbulent flow, theories of turbulent shear stress, hydro-dynamically smooth and rough surface, modeling of turbulence, Moody's chart. **5.3 Flow Through pipes:** Energy losses in pipes: Minor and Major losses, Darcy-Weisbatch equation for head loss in pipes, hydraulic gradient lines, and total energy lines, pipes in series and parallel, Equivalent pipe.	10
6	**Boundary Layer Theory**: Concept of Boundary layer, Boundary layerover flat plate, Boundary Layer thickness, momentum thickness, displacement thickness and energy thickness. Boundary layer equations andtheir solutions. Blasius solution (without derivation), Von-Karman momentum integral equation. Laminar boundary layer and turbulent boundary layer. Separation and control and Concept of drag.	05
	Total	**45**

Text Books:

1. Frank M. White (2002), "Fluid Mechanics", McGraw Hill.
2. S.K. Som, G.Biswas(2015), "Introduction to Fluid Mechanics and Fluid Machines", TMH Delhi

Reference Books:

1. John F. Douglas, JanuszGasiorek (2001), "Fluid Mechanics", 4th Edition,*Pearson Education*.
2. K.L. Kumar (2014), "Engineering Fluid Mechanics", S. Chand
3. P.N. Modi, S.M. Seth (2015), " Hydraulics and Fluid Mechanics including Hydraulic Machines", *Rajsons Publications*
4. M.P. Escudier(2010), " The Essence of Engineering Fluid Mechanics", *Prentice Hall*
5. K. Subrmanyan (2005), "Fluid Mechanics", *Tata McGraw Hill.*
6. R.V. Giles, J.B. Evett, Cheng Liu(2013), "Fluid Mechanics and Hydraulics", Schaum Outline Series, 4th edition, *McGraw Hill*



Any other information:

Details of Internal Continuous Assessment (ICA)
Test Marks: 20
Term Work Marks: 30

Details of Term Work:
Term work should consists of the following

1. Minimum 6 experiment from the list below:
   - To determine coefficient of discharge of Venturimeter
   - To determine coefficient of discharge of Orifice Meter
   - To determine friction factor of Pipe
   - To study minor losses in various Pipe Fittings
   - To determine viscosity of oil
   - To determine Reynolds's Number
   - Determination of Meta-centric Height
1. Minimum three assignments covering the syllabus.

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Program: B. Tech (Mechanical Engineering)				**Semester:** IV	
Course/Module: Thermal Engineering				**Module Code:** BTME04011	
Teaching Scheme				**Evaluation Scheme**	
Lecture Hours per week	**Practical Hours per week**	**Tutorial Hours per week**	**Credit**	**Internal Continuous Assessment (ICA) (Marks-50)**	**Term End Examinations (TEE) (Marks -100 in Question Paper)**
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50

Pre-requisite: Mathematics - I and II (BTME01001, BTME02008), Engineering Thermodynamics (BTME03012)

Objectives:

- To make the students acquire the skills to analyze the performance of gas power cycle and vapor power cycle.
- To impart knowledge of compressible flows essential for the design of nozzles and understand the working of compressors and steam turbines.
- To introduce the fundamental concepts in combustion.

Outcomes:

After completion of the course, students would be able to:

- Understand the working of various types of compressors, steam turbines and analyzing their performance.
- Apply fundamentals of compressible fluid flow to analyze gas and steam nozzles.
- Understand gas power cycles, vapour power cycles and analyze their performance.

Detailed Syllabus: (per session plan)

Unit	Description	Duration
1	**Air Compressors:** classification, single stage and multi stage reciprocating compressors; p-V diagram, expression for work input and volumetric efficiency, inter-cooling, effect of clearance volume. Rotary compressor, classification, centrifugal compressor, working, velocity diagram.	08
2	**Gas power cycles:** Carnot gas power cycle and its limitations. Analysis of air standard Otto, Diesel and Dual combustion cycles and their comparison. **Analysis of simple gas turbine cycle (Brayton cycle)**; reheat, regeneration, intercooling, effect of operating variables on thermal efficiency of gas turbine. Analysis of turboprop and turbojet engine cycles.	10
3	**Introduction to I.C. Engines:** Engine nomenclature, two stroke and four stroke engine; SI, CI Engines; Engine performance parameters and their measurements. Heat balance sheet.	06
4	**Vapour Power Cycles:** Carnot vapour power cycle; simple Rankine cycle; performance and efficiency; analysis of modified Rankine cycles like reheat cycle, regenerative cycle. Reheat-regenerative cycle; binary	07

	vapour cycle; process heat and by-product power; efficiencies of steam power plant.	
5	**Gas and Steam Nozzles:** Compressible fluid flow through nozzles, diffusers, Stagnation properties; Mach Number, Isentropic flow, steam tables – flow through nozzles, critical pressure ratio and effect of back pressure.	04
6	**Steam turbines:** Impulse turbine, reaction turbine, velocity compounding, pressure compounding, velocity diagrams for single and multistage turbines, power developed, efficiencies, degree of reaction, Parson's reaction turbine.	10
	Total	**45**

Text Books:

1. P. K. Nag (2010), "Basic and Applied Thermodynamics", 2nd Edition, *Tata McGraw Hill.*
2. M. M. Rathore (2010), "Thermal Engineering", *Tata McGraw Hill.*
3. V. Ganesan (2012), "Internal combustion Engines", 4th Edition, *Tata McGraw Hill.*

Reference Books:

1. Moran, M. J., Shapiro, H. N., Boettner, D. D., & Bailey, M. B. (2010). Fundamentals of engineering thermodynamics. John Wiley & Sons.
2. Y. A. Cengel and M. A. Boles (2003), "Thermodynamics – An engineering Approach", *Tata McGraw Hill.*
3. V. Kadambi and M. Prasad (1974) (Classic), "An Introduction to Energy Conversion – Volume II Energy Conversion Cycles", *Wiley Eastern.*
4. P.K.Nag (2008), "Power plant engineering", 3rd edition", *Tata McGraw Hill.*
5. V.Ganesan (2010), "Gas Turbines", 3rd edition, *Tata McGraw Hill.*
6. S.M.Yahya (2011), "Turbine Compressor and Fans", 4th edition, *Tata McGraw Hill.*

Any other information: Nil
Details of Internal Continuous Assessment (ICA)
Test Marks: 20
Term Work Marks: 30
Details of Term Work:
Term work should consists of the following

1.Minimum 6 experiment from the list below:

- Performance of a 4 stroke Diesel Engine and drawing a heat balance sheet.
- Performance evaluation of four stroke petrol engine.
- Performance evaluation of two stroke petrol engine.
- Performance evaluation of multi cylinder Diesel/Petrol engine (Morse Test).
- Performance evaluation of a reciprocating air compressor.
- Determination of Thermal Efficiency of Rankine cycle

2. Minimum four assignments covering the syllabus.

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Program: B. Tech (Mechanical Engineering)				**Semester:** IV	
Course/Module: Manufacturing Processes - I				**Module Code:** BTME04012	
Teaching Scheme				**Evaluation Scheme**	
Lecture (Hours per week)	**Practical (Hours per week)**	**Tutorial (Hours per week)**	**Credit**	**Internal Continuous Assessment (ICA) (Marks-50)**	**Term End Examinations (TEE) (Marks -100 in Question Paper)**
3	0	0	3	Marks Scaled to 50	Marks Scaled to 50

Pre-requisite: Workshop/ Manufacturing Practice (BTME02011)

Objectives:

- To introduce different manufacturing processes like casting, welding, forging, rolling, extrusion, drawing, machining etc.
- To impart knowledge of industrial applications of various processes, equipment used in manufacturing.

Outcomes :

After completion of the course, students would be able to:

- Understand different metal casting processes, forming processes and joining processes along with defects associated with them.
- Apply the knowledge, techniques, skills, and tools of the manufacturing processes to broadly defined engineering technology activities.
- Identify proper manufacturing processes meeting the requirements to the solution of manufacturing problems.

Detailed Syllabus: (per session plan)

Unit	Description	Duration
1	**Lathe:** Introduction, Construction, working and operations performed on lathe, attachments and accessories, types of cutting tools, cutting parameters such as spindle speed, feed and depth of cut, Capstan and Turret lathe, automatic lathes and their construction.	09
2	**Metal Casting:** **Pattern Making**: Types of patterns, allowances, colour coding; Foundry practices **Moulding sands**: types, properties, preparation and testing of sand. Core boxes, core making, types of cores and their manufacturing; Gating system – runner and risers; **Moulding processes**: shell moulding, CO_2 moulding, investment casting, die casting, centrifugal casting and continuous casting; Study of various defects in castings.	12
3	**Forming processes:** Cold and hot working **Rolling:** Principle and mechanism, types of rolling and their applications, defects in rolling. **Forging:** Classification of forging processes, basic categories and methods of forging, heat treatment of forged parts. **Extrusion**: Hot And cold Extrusion, Equipment, Estimation of extrusion force,	13

	defects In extruded parts; wire and tube Drawing: Metal Stamping And Embossing, blanking, piercing, bending, deep drawing. **Press tools:** Different type of presses and their working, Progressive die, Compound and combination dies	
4	**Joining processes:** Surface preparation for joining and various types of joints; classification of welding processes - arc Welding, submerged arc welding, gas and metal arc welding, tungsten arc welding – theory and their applications; electron beam welding, ultrasonic welding, laser beam welding, resistance welding, spot, seam and projection welding processes, welding of various metals, characteristics of good weld, weld defects and weldability of metals; soldering, brazing and their applications; adhesives for joining.	11
	Total	**45**

Text Books:

1. Rao P. N. (2008), "Manufacturing Technology-Vol I", *Tata McGraw Hill.*
2. Kalpakjian S. and Schmid S. R. (2002), "Manufacturing Engineering and Technology", 4th Edition, *Pearson.*

Reference Books:

1. Chapman W. A. J. (2011), "Work Shop Technology- Vol I, II, III", *ELBS Publishers.*
2. Lal G. K. (2010), "Fundamentals of Manufacturing Processes", *Alfa Science International.*
3. Kou Sindo (2003), "Welding Metallurgy", *Wiley Inter science.*

Any other information: Nil

Details of Internal Continuous Assessment (ICA)
Test Marks: 20
Term Work Marks: 30

Details of Term Work:
Term work should consists of the following

1. Visit to foundry/ CNC machining / fabrication unit
2. Viva Voce, Quizzes, Presentations based on syllabus.
3. Minimum four assignments covering the syllabus.

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Program: B. Tech (Mechanical Engineering)				**Semester:** IV	
Course/Module: Machine Shop-I				**Module Code:** BTME04013	
Teaching Scheme				**Evaluation Scheme**	
Lecture (Hours per week)	**Practical (Hours per week)**	**Tutorial (Hours per week)**	**Credit**	**Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)**	**Term End Examinations (TEE) Theory (-----)**
0	2	0	1	Scaled to 50 marks	-

Pre-requisite: Workshop/ Manufacturing Practice (BTME02011)

Objectives:

- To train the students on turning operation such as plain, taper turning, facing, thread cutting, grooving and wire drawing die on metals

Outcomes :

After completion of the course, students would be able to:

- Apply different operations on lathe like plain, taper turning, facing, grooving and knurling.
- Operate different operations like screw cutting and threading
- Practise different operation on lathe like drilling, boring, counter boring, internal taper turning.

Detailed Syllabus: (per session plan)

Unit	Description	Duration
1	Job on lathe performing plain and taper turning.	08
2	Job on precision turning and screw cutting.	10
3	Assembly of Two pieces by using operations like drilling, boring, counter boring, internal taper turning.	12
	Total	**30**

Any other information: Nil

Details of Internal Continuous Assessment (ICA)
Test Marks: 20
Term Work Marks: 30

Details of Term Work:
Term work should consists of the following

- Jobs to be done as prescribe in the syllabus

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Program: B.Tech. (Mechanical Engineering)				**Semester :** IV	
Course/ Module: Principles of Economics and Management				**Module Code:** BTME04014	
Teaching Scheme				**Evaluation Scheme**	
Lecture (Hours per week)	**Practical (Hours per week)**	**Tutorial (Hours per week)**	**Credit**	**Internal Continuous Assessment (ICA) (Marks – 50)**	**Term End Examinations (TEE) (Marks- 100 in Question Paper)**
3	0	0	3	Marks Scaled to 50	Marks Scaled to 50

Pre-requisite: Nil

Objectives:

This course provides basic orientation towards economic(micro and macroeconomic) principles and help them understand the functions of management

1. To combine elements of basic micro and macroeconomics
2. To understand issues dealing with small-scale economic phenomena and concepts such as prices and output of firms, industries and resource owners
3. To examine market impact of technological change
4. To understand broader aspects of the economy and its environment

Outcomes:

After completion of the course, students would be able to :

1. Analyse and evaluate the impact of Economic Policies and its implication on the Business Environment
2. Understand basic concepts of economics (demand, supply, elasticity, scarcity) and explain behaviour on individual, households and firm.
3. Handle economic data and write economic report
4. Orient students towards basic management principles and act as foundation for higher levels of learning
5. To be able to handle basic functions of management (planning, organising, coordination, and control)

Detailed Syllabus: (per session plan)

Unit	Description	Duration
1	Introduction: Definition of Economics, Types of economic systems, problem of scarcity of economic resources.	2
2	Demand and Supply: Demand Curve and Supply Curve, Equilibrium of Demand and Supply, Shift in Demand and Supply. Application of Demand and Supply: Price Elasticity of Demand, Price Elasticity of Supply, Factors which influence Elasticity, Elasticity and Revenue.	3
3	Market Structure /industry analysis types of Competition: monopoly, oligopoly, monopolistic competition, perfect and imperfect competition, government policies towards industries. Circular flow of Economy, Structures, Role of Government, Business Cycles.	3
4	Macroeconomics : National Income – Gross Domestic Product (GDP), Gross National Product (GNP), Inflation – Cost Push and Demand Pull Inflation, Unemployment, Philips Curve	3

5	Functions of Central Bank Money supply, RBI & Monetary Policy.(Current Credit Policy to be critiqued) Stabilization policy : Role of fiscal Policy Demand and Consumer Behavior: Utility and Marginal Utility, Types of Goods	3
6	New economic policy :Liberalization, privatization and globalization	3
7	Theory of Production : Law of Diminishing Returns, Returns to Scale, Productivity	3
8	Analysis of Costs: Types of Costs – Total Cost, Fixed Cost, Variable Cost, Marginal Cost, Impact of Marginal Cost on Average Cost.	3
9	Introduction to Management: Management & Organizations, Management History, Understanding Management thought ,contribution of F.W. Taylor, Henry Fawol, Elton –Mayo Contexts- Constraints & Challenges	5
10	Planning: Managers as Decision makers, Foundations of Planning, Strategic Management	4
11	Organizing: Line and staff relationships ,centralization and decentralization , role of delegation ,Managing Human Resources, Managing Teams	4
12	Leading and Motivation: Basic concepts and practices –Maslows Herzberg McClealand 's theory of Achievement	4
13	Controlling: Introduction to Controlling inventory, quality control.	3
14	Orientation towards Finance, Marketing Human resources and Operation departments	2
	Total	**45**

Text Books:

1. Samuelson and Nordhaus, (2010), *Economics - 19th edition*, Tata McGraw Hil Publication.
2. Datt and Sundharam, (2009), *Indian Economy - 67th edition*, S. Chand Publication.
3. Koontz. H. (2012). *Essentials of Management: International and Leadership Perspective*. McGraw Hill Education (India).
4. Collins, J. (2001). *Good to Great: Why Some Companies Makes the Leap and Other's Don't*. Random House Business Books.

Reference Books:

1. Mankiw Gregory, (2008), *Principles of Economics*, Cengage Learning
2. Rakesh Singh, (2007), *Analyzing Macro-Economics*, Shroff Publishers

Any other information :
Details of Internal Continuous Assessment (ICA)
Test Marks : 20
Term Work Marks : 30
Details of Term work :
Term work should consists of the following:

- Class Test/ Assignment/Case Studies/Projects/ Presentations

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