MATS UNIVERSITY
SEMESTER – V
BRANCH – MECHANICAL
SUBJECT - COMPUTER AIDED DESIGN AND MANUFACTURING
CODE - BT510

UNIT – I

Introduction CAD/CAM

The influence of computers on manufacturing environment, Introduction of CAD/CAM, the product cycle & CAD/CAM, automation and CAD/CAM, the common database as linkage to various computerized applications.

Product engineering, Benefits of CAD/CAM, Concurrent engineering.

UNIT – II

Geometric Modelling

Data base: Design database concept, objectives, data structures, creation of data files in application programs and relational database management system.

Requirement of Geometric Modelling, Geometric models, Geometric construction Methods, other modelling methods, curve representation, desirable modelling facilities & rapid prototyping.3D representation of surfaces and solids; Plane surface, surfaces of revolution, Bezier surfaces, spline surfaces, Solid entities, basic set theory.

UNIT – III

Numerical Control

Introduction to Numerical Control, Basic components of an NC system, the NC procedure, NC coordinate systems, NC motion control systems, applications of Numerical Control, Introduction to Computer Control in NC, problems with conventional NC, Computer Numerical Control, Direct Numerical Control, Combined DNC/CNC system,

Adaptive control machining system,

NC Part Programming

Introduction to NC Part Programming, Manual part programming, Computer assisted part programming, the APT (Automatically Programming Tool) language, MACRO statement in APT, Advantages of CAD/CAM in NC programming.

UNIT – IV

Group Technology

introduction to group technology, part families, parts classification & coding, three parts classification & coding system, group technology machine cells, benefits of group technology

Computer integrated manufacturing (CIM) system

Introduction of CAPP, Flexible manufacturing system, benefits.

UNIT V

Finit Element method

Introduction, types of analysis, general procedure of finite element analysis- stiffness matrix, solution procedure,

one dimensional problem.

TEXT BOOKS

1. CAD/CAM Principles & Applications – P.N. Rao – TMH Publication
2. CAD/CAM Computer Aided Design & Manufacturing – Mikell P. Groover, Emory W. Zimmer - Pearson
Education
3. Concept and application of Finite element analysis, R D Cook, John Wiley

REFERENCES BOOKS

1. CAD/CAM Theory & Practice – Ibrahim Zied – TMH Publication
2. CAD/CAM – Surendra Kumar & A.K. Jha – Dhanpat Rai & Company
3. Finite element analysis

MATS UNIVERSITY
SEMESTER – V
BRANCH – MECHANICAL
SUBJECT - TURBOMACHINERY
CODE – BT511

UNIT – I

Impulse Turbine

Steam turbine – Principal of operation of steam turbine, types, impulse turbine compounding of steam turbine pressure compounded velocity compounded and pressure – velocity compounded impulse turbine. Velocity diagram for impulse turbine, force on the blade and work done. Blade or diagram efficiency, gross stage efficiency. Influence of ratio of blade to steam speed on blade efficiency in a single stage impulse turbine. Efficiency of multi-stage turbine. Impulse blade sections, choice of blade angle. Blade height in velocity compounded impulse turbine.

UNIT – II

Impulse Reaction Turbine

Velocity diagram, degree of reaction, impulse-reaction turbine with similar blade section and half degree of reaction. (Parson's turbine) Height of reaction turbine blading section internal losses in steam turbine Nozzle, Losses, blade friction losses, disc friction losses, blade wind age losses or partial admission losses, gland leakage or clearance losses, leaving velocity or residual loss, carry loss.

UNIT – III

State Point Locus and Reheat Factor

Factor-Stage, efficiency of impulse turbines, stage point locus of an impulse turbine, state point locus for multistage turbine reheat factor. Internal efficiency, overall efficiency, relative efficiency, governing of steam turbine. Throttle governing, nozzle governing, bypass governing, combination of throttle and nozzle, governing and combination of bypass and throttle governing. Effect of governing on the performance of steam turbine.

UNIT – IV

Gas Turbine

Classification of gas turbine. Simple open cycle gas turbine Ideal and actual cycle (Brayton Cycle) for gas turbine. Optimum pressure ratio for maximum specific output in actual gas turbine Regeneration, reheats and inter cooling and effect of these modification on efficiency and output, closed cycle gas turbine.

UNIT – V

Centrifugal Compressors

Principle of operation, work done and pressure rise, velocity diagram for centrifugal compressor, slip factor, stage factor, stage pressure rise, loading coefficient, diffuser, degree of reaction, centrifugal compressor characteristic curves..

Axial Flow Compressor-

Principle of operation and working, energy transfer, velocity diagram for axial compressor, factors affecting stage pressure ratio, degree of reaction, calculation of stage performance, axial compressor performance characteristic curves.

TEXT BOOKS

1. Steam and Gas turbine – By R. Yadav - Central Publishing House, Allahabad
2. Design of high efficiency turbo machinery and gas turbines, david Gordon Wilson, theodosios korakianitis, prentice hall international.
3. Turbine compressors and Fans – S.M. Yahya – TMH
4. Gas Turbine – V. Ganeshan – TMH

MATS UNIVERSITY
SEMESTER – V
BRANCH – MECHANICAL
SUBJECT - MACHINE DESIGN- I
CODE - BT512

UNIT I

Definition of design, types of design, design process, need, defining the problem, feasibility, preliminary design alternatives, final design selection, preliminary and final plant drawings. Failure criterion & manufacturing considerations in design, basis of good design, failure of machine parts ,deformations ,wear, corrosion, manufacturing methods, machining tolerance, surface finish, cost design consideration in casting & forging. Mechanical properties , application and designing as per ISI and their equivalence with other standards of engineering materials, selection of material ,temperature effect on properties of material such as cast iron ,plain carbon steel, plastics, polymers & composites & their application .

UNIT – II
Basic Elements Design
Types of key and design, design of socket-spigot cotter joint, sleeve and cotter joint, gib and Cotter joint, design of Knuckle joint, design of splines.

UNIT III
Threaded Fasteners
Geometry of thread forms, terminology of screw threads and thread standards, specifications of steel bolts, initial tension, and relation between bolt tension and torque, design of statically loaded tension joints, design of bolted joints due to eccentric loading.
Riveted Joints
Types of rivet heads, types of riveted joints, failure of riveted joint, strength of rivet joint, efficiency of riveted joint, design of riveted joint for boiler.
Welded joint
Types of welded joints, stresses in butt and fillet welds, strength of welded joints, location and dimension of weld design, eccentrically loaded joint, welded joint subjected to bending moment, design procedure, fillet welds under varying loads, stress relieving techniques.

UNIT-IV
Collar friction, Stresses in screw, coefficient of friction, efficiency of thread.
Power Screws
Power screws, Force analysis-square and trapezoidal threads,
Chain Drives
Chain drives, roller chains, geometric relationships, dimensions of chain components polygonal effect, power rating of roller chains.

UNIT-V

Design of transmission Shafts on the Basis of Strength , rigidity and critical speed. ASME Code for shaft Design, Design of Stepped shaft Axle splined Shaft, Design of axle. Design of couplings – muff, rigid and Flexible coupling, design of axle.

BOOKS

1) Mechanical Design of Machine : Maleev hartman.
2) Machine Design : P. H. Black.
3) Mechanical Engg. Design : J. E. Shigley.
4) Design of Machine Element : V. Bhandari , TMH PUBLICATIONS
5) Design of Data for Machine Elements : B. D. Shiwalkar.

MATS UNIVERSITY
SEMESTER – V
BRANCH – MECHANICAL
SUBJECT – ENERGY STUDIES
CODE – BT513

UNIT-I

Energy Sources - Fossil fuels, Nuclear fuels, hydel, solar, wind and bio fuels in India, Energy conservation, Nuclear energy through fission and fusion processes.

UNIT-II

Energy Conversion- Energy conversion from source to utility, Solar, Nuclear, Geothermal, Tide and Wind Energies.

UNIT – III

Classical sources of energy crisis and search for alternative sources of energy. Solar energy, earth sun angles ,resolution, solar measurement, collection of solar energy, flat plate and focusing collector analysis, calculations and same design parameters. Applications of solar energy .Introduction to Photovoltaic cell energy conversion techniques. Derivation for collector efficiency for flat plate collector.

UNIT – IV

Gasifiers, Gobar Gas plant, types of applications, Biomass conversion technologies, biogas Generation.
Basic principles of wind energy conversion, wind energy estimation, site selection consideration, basic components of wind energy conversion system, classification, advantages & disadvantages of WECS.

UNIT-V

Energy Policy: Energy policy issues at global level, national level and state level, Energy conservation act 2001, Electricity act 2003, Energy pricing and its impact on global variations.

Text Books

1. Jose Goldenberg, Thomas Johanson, and Reddy, A.K.N., Energy for Sustainable World, WileyEastern, 2005.
2. Charles E. Brown, World Energy Resources, Springer Publication, New York, 2002.
3. Solar Energy – Garg & Prakash – TMH Pub.
4. Non Conventional Energy Sources – D.S. Chauhan – New Age International Pub.
5. Fundamental of Compressible Fluid Dynamics – P. Balachandran – PHI

6. Non-Conventional Energy Sources - G.D. Rai – Khanna Publishers

MATS UNIVERSITY
SEMESTER - V
BRANCH - MECHANICAL
SUBJECT - HEAT AND MASS TRANSFER
CODE – BT514

UNIT – I

Introduction

General equation of conduction in Cartesian and cylindrical coordinates. Various modes of heat transfer, Fourier's, Newton's and Stefan Boltzmann's Law, Combined modes of heat transfer, thermal transfer, thermal diffusivity, overall heat transfer coefficient.

Conduction

The thermal conductivity of solids, liquids and gases, factors influencing conductivity measurement. The general differential equation of conduction. One dimensional steady state conduction, linear heat flow through a plane and composite wall, tube and sphere, critical thickness of insulation, Effect of variable thermal conductivity, Conduction with heat generation in flat and cylinders.

UNIT - II

Fins

Analysis of pin fins, conduction through infinite & semi infinite slab and cylinder. Conduction convection system, extended surfaces rectangular, triangular, circumferential and pin fins. General conduction analysis, fins of uniform and non-uniform cross sectional area. Heat dissipated by a fin. Effectiveness and efficiency of fins. Approximate solution. Design of fins for maximum heat transfer. Solution for different boundary condition. Use of fin analysis for measuring temperature error of Thermometer.

Transient/Unsteady State Heat Conduction

System with negligible internal resistance, Lumped capacity method and its Validity. Unsteady state conduction through finite and semi- infinite slab without surface resistance, convection boundary conditions. Solution through Heislers chart.

UNIT – III

Forced Convection

Physical Mechanism of Forced Convection, Dimensional analysis for forced convection, velocity and Thermal Boundary layer, Flow over plates, Flow across cylinders and spheres, Flow in tubes, Reynold's analogy. Derivation of laminar heat transfer coefficient for pipe internal flow.,Heat transfer over laminar

And turbulent flow over flat plates.

Natural Convection

Physical Mechanism of Natural Convection, Dimensional analysis of natural convection; empirical relationship for natural convection.

UNIT- IV

Two Phase Heat Transfer

Boiling heat transfer, Pool boiling, boiling regimes and boiling curve, next transfer correlations in pool boiling. Condensation heat transfer, Film condensation, derivation for the average heat transfer

coefficient ‘h’ for the case of laminar film condensation over vertical plate, Heat transfer correlation for inclined plates, vertical tubes, Horizontal bank tubes.

Heat Exchangers

Different types of heat exchangers; Determination of heat exchanger performance, Heat exchanger transfer units, Analysis restricted to parallel and counter flow heat exchanger (LMTD and NTU method) Preliminary design of heat exchangers (i) liquid to liquid (ii) liquid to gas.

UNIT- V

Thermal Radiation

Introduction, absorption and reflection of radiant energy, Emission, Radiosity and irradiation, Black and non black bodies, Kirchhoff’s law; intensity of radiation, radiation exchange between black surface, geometric configuration factor. Grey body relation exchange between surface of unit configuration factors. Electrical analogy to simple problems. Non-luminous gas radiation. Errors in temperature measurement due to radiation.

Introduction to Mass Transfer

Mass and mole concentrations, molecular diffusion, eddy diffusion, Molecular diffusion from an evaporating fluid surface, Introduction to mass transfer in laminar and turbulent convection Combined heat and mass transfer, the wet and dry bulb thermometer.

TEXT BOOKS

1. Heat Transfer – S.P. Sukhatme – TMH
2. Heat & Mass Transfer – D.S. Kumar – S.K. Kataria& Sons
3. Heat transfer- C P Arora, TMH
4. Heat & Mass Transfer – K. Kannan – Anuradha Agencies
5. Heat Transfer – J.P. Holman – TMH
6. Heat Transfer – A Practical Approach – Yunus A. Cengel – McGraw Hill

MATS UNIVERSITY
SEMESTER – V
BRANCH – MECHANICAL
SUBJECT- COMPUTER AIDED DESIGN AND MANUFACTURING LAB
CODE-BT517

EXPERIMENTS TO BE PERFORMED
CAD (MINIMUM FIVE EXPERIMENTS)
1. Introduction & different features of the CAD Software
2. 2-D Drafting
3. 3-D Modelling
4. 3-D Advanced Modelling
5. Assembly modelling
6. Feature Modification and Manipulation
7. Detailing
8. Sheet Metal Operations
9. Surface Modelling
10. One Dimensional problems of Finite Element Method.
(These exercises may be performed by any of the following Advanced CAD Software)

CAM (MINIMUM FIVE EXPERIMENTS)
1. To prepare part programming for plain turning operation.
2. To prepare part programming for turning operation in absolute mode.
3. To prepare part program in inch mode for plain turning operation.
4. To prepare part program for taper turning operation.
5. To prepare part program for turning operations using turning cycle.
6. To prepare part program for threading operation.
7. To prepare part program for slot milling operation.
8. To prepare part program for gear cutting operation.
9. To prepare part program for gear cutting using mill cycle.
10. To prepare part program for drilling operation.
11. To prepare part program for multiple drilling operation in Z-axis.
12. To prepare part program for multiple drilling in X-axis.
13. To prepare part program for multiple drilling in X and Z axis using drilling cycle.

LIST OF EQUIPMENTS/MACHINES REQUIRED
1. Computer Numerically Control Lathe Trainer
2. P-IV (IBM) 2.6 GHz, 80 GB HDD,256/512 SD RAM(As Compatible with CAD Software) 52 X CD RW, 1.44 MB
FDD, 17” Colour Monitor, Laser Scroll Mouse
3. Software – Pro-E, Solid-work, CATIA, ANSYS
4. CNC Controlled Milling Machine
5. CNC Controlled Drilling Machine

MATS UNIVERSITY
SEMESTER – V
BRANCH – MECHANICAL
SUBJECT- MACHINE DESIGN -I LAB
CODE -BT518

EXPERIMENTS TO BE PERFORMED

Each student shall submit two-assembly design report along with the drawing for assembly/sub assembly for any mechanical system consisting of not less than four machine elements included in the syllabus.

MATS UNIVERSITY
SEMESTER –V
BRANCH – MECHANICAL
SUBJECT-HEAT & MASS TRANSFER LAB
CODE-BT519

EXPERIMENTS TO BE PERFORMED (MINIMUM TEN NUMBERS)

1. To Determine Thermal Conductivity of Insulating Powders.
2. To Determine Thermal Conductivity of a Good Conductor of Heat (Metal Rod).
3. To Measure the thermal Conductivity of Liquid.
4. To determine the transfer Rate & Temperature Distribution for a Pin Fin.
5. To Measure the Emissivity of the Test plate Surface.
6. To Determine Stefan Boltzmann Constant of Radiation Heat Transfer.
7. To Determine the Surface Heat Transfer Coefficient For Heated Vertical Cylinder in Natural Convection.
8. Determination of Heat Transfer Coefficient in Drop Wise & Film Wise condensation.
9. To Determine Critical Heat Flux in Saturated Pool Boiling.
10.To Study Performance of Simple Heat Pipes.
11. To Study and Compare LMTD and Effectiveness in Parallel and Counter Flow Heat Exchangers.
12. To Find the Heat transfer Coefficient in Forced Convection in a tube.
13. To determine the total thermal conductivity and thermal resistance of the given compound resistance in series.
14. To find out the thermal conductivity of given slab material.
15. To determine the individual thermal conductivity of different lagging in a lagged pipe.
16. To study the rates of heat transfer for different materials and geometries
17. To understand the importance and validity of engineering assumptions through the lumped heat capacity method.
18. Testing and performance of different heat insulators.

LIST OF EQUIPMENTS/MACHINES REQUIRED

1. Thermal Conductivity of Insulating Powder Apparatus
2. Thermal Conductivity of Metal bar Apparatus
3. Thermal Conductivity of Liquid Apparatus
4. Transfer Rate and Temperature Distribution for a Pin Fin Apparatus
5. Emissivity of The Test Plate Surface And Plotting A Graph Of Emissivity Versus Temperature Apparatus
6. Stefen Boltzmann Constant of Radiation of Heat Transfer Apparatus
7. Surface Heat Transfer Coefficient for Heated Vertical Cylinder in Natural Convection Apparatus
8. Heat Transfer Coefficient in Drop Wise and Film Wise Condensation Apparatus

9. Critical Heat Flux in Saturated Pool Boiling Apparatus
10. Performance of Different Heat Pipe Apparatus
11. Heat Transfer Rate through Heat Exchanger Apparatus
12. Heat Transfer Coefficient in Forced Convection of Air in a Tube Apparatus
13. Heat transfer through composite wall Apparatus
14. Thermal conductivity of insulating slab Apparatus
15. Heat transfer through lagged pipe Apparatus
16. Unsteady state heat transfer Apparatus
17. Testing and performance Test Rig for heat insulators.

MATS UNIVERSITY
SEMESTER –V
BRANCH – MECHANICAL
SUBJECT- Artificial Intelligence and Robotics
CODE- BT5151

UNIT 1

Scope of AI -Games, theorem proving, natural language processing, vision and speech processing, robotics, expert systems, AI techniques- search knowledge, abstraction.

UNIT 2

Problem solving - State space search; Production systems, search space control: depthfirst, breadth-first search, heuristic search - Hill climbing, best-first search, branch and bound. Problem Reduction, Constraint Satisfaction End, Means-End Analysis

UNIT 3

Knowledge Representation- Predicate Logic: Unification, modus pones, resolution, dependency directed backtracking. Rule based Systems: Forward reasoning: conflict resolution, backward reasoning: use of no backtracks. Structured Knowledge Representation: Semantic Nets: slots, exceptions and default frames, conceptual dependency, scripts.

UNIT 4

Handling uncertainty and learning- Non-Monotonic Reasoning, Probabilistic reasoning, use of certainty factors, fuzzy logic. Concept of learning, learning automation, genetic algorithm, learning by inductions, neural nets.

UNIT 5

Robotics : Robot Classification, Robot Specification, notation; Direct and Inverse Kinematics: Co-ordinates Frames, Rotations, Homogeneous Coordinates, Arm Equation of four Axis SCARA Robot, TCV, Inverse Kinematics of Four Axis SCARA Robot. 69

Text Books:

1. E. Rich and K. Knight,“Artificial intelligence”, TMH

2. N.J. Nilsson, “Principles of AI”, Narosa Publ. House, 2000.

3. Robin R Murphy, Introduction to AI Robotics PHI Publication, 2000

4. D.W. Patterson, “Introduction to AI and Expert Systems”, PHI, 1992.

5. R.J. Schalkoff, “Artificial Intelligence - an Engineering Approach”, McGraw Hill Int. Ed., Singapore, 1992.

MATS UNIVERSITY

SEMESTER –V
BRANCH – MECHANICAL
SUBJECT- Analog & Digital Communication
CODE- BT5152

UNIT 1:

Pulse Modulation-Sampling process –PAM- other forms of pulse modulation – Bandwidth – Noise trade off –Quantization –PCM- Noise considerations in PCM Systems-TDM Digital multiplexers-Virtues, Limitation and modification of PCM-Delta modulation –Linear prediction –differential pulse code modulation – Adaptive Delta Modulation

UNIT 2:

Baseband Pulse Transmission- Matched Filter- Error Rate due to noise –Inter-symbol Interference- Nyquist‟s criterion for Distortion-less Base band Binary Transmission- Correlative level coding –Baseb and M-ary PAM transmission –Adaptive Equalization –Eye patterns.

UNIT 3:

Pass band Data Transmission-Introduction – Pass band Transmission model- Generation, Detection, Signal space diagram, bit error probability and Power spectra of BPSK, QPSK, FSK and MSK schemes –Differential phase shift keying – Comparison of Digital modulation systems using a single carrier – Carrier and symbol synchronization.

UNIT 4:

Error Control Coding- Discrete memory-less channels – Linear block codes - Cyclic codes - Convolution codes –Maximum likelihood decoding of convolution codes-Viterbi Algorithm, Trellis coded Modulation, Turbo codes.

UNIT 5:

Spread Spectrum Modulation- Pseudo- noise sequences –a notion of spread spectrum – Direct sequence spread spectrum with coherent binary phase shift keying – Signal space Dimensionality and processing gain – Probability of error – Frequency –hop spread spectrum – Maximum length and Gold codes.

Text Books:

1. Simon Haykins, “Communication Systems” John Wiley, 4th Edition, 2001

2. Taub & Schilling , “Principles of Digital Communication “ Tata McGraw-Hill” 28th reprint, 2003

3.Sam K.Shanmugam “Analog & Digital Communication” John Wiley

MATS UNIVERSITY
SEMESTER –V
BRANCH – MECHANICAL
SUBJECT- Infrastructure Systems Planning
CODE- BT5153

UNIT 1:

Infrastructure Systems Planning- An Overview Definitions, Infrastructure management activities, Evolutions of Systems since 1960s (Mainframes-to-Midrange-to-PCs-to-Client-server computing-to-New age systems) and their management, growth of internet, current business demands and IT systems issues, complexity of today's computing environment, Total cost of complexity issues, Value of Systems management for business.

UNIT 2:

Preparing for Infrastructure Systems Planning & Management- Factors to consider in designing IT organizations and IT infrastructure, Determining customer's Requirements, Identifying System Components to manage, Exist Processes, Data, applications, Tools and their integration, Patterns for IT systems management, Introduction to the design process for information systems, Models, Information Technology Infrastructure Library (ITIL).

UNIT 3:

Service delivery processes- service-level management, financial management & costing, it services continuity management, capacity management, availability management. Service support processes, configuration management, service desk. Incident management, problem management, change management, release management.

UNIT 4:

Storage and Security Management Introduction Security, Identity management, Single sign-on, Access Management, Basics of network security, LDAP fundamentals, Intrusion detection, Firewall; security information management Introduction to Storage, Backup & Restore, Archive & Retrieve, Space Management, SAN & NAS, Disaster Recovery, Hierarchical space management, Database & Application protection, Bare machine recovery, Data retention.

UNIT 5:

System thinking method for model-building of infrastructural planning model observation, construction of model structure, simulation analysis, multi-agent system.

Text/Reference Books:

1. Foundations of IT Service Management: based on ITIL, by Jan Van Bon, Van Haren Publishing, 2005.

2. High Availability: Design, Techniques & Processes, by Floyd Piedad, Michael Hawkins, Prentice Hall, 2000.

3. IT Organization: Building a World class Infrastructure, by Harris Kem, Stuart Gaiup, Guy Nemiro, Prentice Hall, 2000.

MATS UNIVERSITY
SEMESTER –V
BRANCH – MECHANICAL
SUBJECT- Rural Technology & Community Development
CODE- BT5154

UNIT 1:

Data Analysis and Measures of Central Tendency- Meaning, nature, scope and limitations of statistics, collection of statistical data, classification, tabulation and diagrammatic representation of data, Measures of central tendency : Statistical averages Mean, Median, Mode.

UNIT 2:

Data, Information and Knowledge; concept of information, need of information (professional, educational, research), qualities of information, value of information, difference between data and information, properties of the needed information. Information and Management; planning, organizing, co-ordinating and controlling.

UNIT 3:

Concepts of marketing; difference between marketing selling and retailing; marketing mix, market-segmentation, marketing planning. Strategy and Approaches; modern concept of marketing.

UNIT 4:

Community development; concept, definition, meaning, need, history, principles, objectives and scope. Community Building: Coming of Age, Regenerating Community, Community Model.

UNIT 5:

Consensus organizing model, what's behind building healthy communities? Participatory democracy, the role of various ngos in community development. The role of business and government in community development initiatives how to form a non-profit corporation fund raising and grant writing.

Text/Reference Books:

1. Biddle, William Wishart. 1968. Encouraging Community Development: A Training Guide for Local Workers. New York: Holt, Rinehart and Winston.

2. Clark, Kenneth B. and Jeannette Hopkins, eds. 1969. A Relevant War Against Poverty: A Study of Community Action Programs and Observable Social Change. New York: Harper and Row.

3. Clinard, Marshall Barron. 1970. Slums and Community Development: Experiments in Self-Help. New York: Free Press.

4. Creevey, Lucy E., ed. 1986. Women Farmers in Africa: Rural Development in Mali and the Sahel. Syracuse, NY: Syracuse University Press.

MATS UNIVERSITY
SEMESTER –V
BRANCH – MECHANICAL
SUBJECT- Managing Innovation and Entrepreneurship
CODE- BT5155

UNIT 1:

Introduction to Entrepreneurship: Evolution of entrepreneurship from economic theory Managerial and entrepreneurial competencies. Entrepreneurial growth and development.

UNIT 2:

Creativity and Innovation: Creativity and Innovation: Concepts Shifting Composition of the Economy Purposeful Innovation & the 7 Sources of Innovative Opportunity The Innovation Process. Innovative Strategies: Strategies that aim at introducing an innovation. Innovation & entrepreneurship: Can they work together? Planning -incompatible with Innovation & entrepreneurship.

UNIT 3:

Entrepreneurial Motivation: Need for continuous learning & relearning Acquiring Technological Innovation Entrepreneurial motivation achievement Motivation in Real life.Case Study.

UNIT 4:

International entrepreneurship: concepts and nature of international entrepreneurship. The changing international environment. Ethics and international entrepreneurship. Strategic issues in international entrepreneurship.

UNIT 5:

Problem identification and problem solving: problem identification. Problem solving. Innovation and diversification.

Text/Reference Books:

1. Martin, M.J., 1994, “Managing Innovation and Entrepreneurship in Technology based Firm”, John Wiley.

2. Ettlie, J.E., 2000, “Managing Technology Innovation”, John Wiley & Sons.

3. Drucker, P. F. (2000), “The Discipline of Innovation,” Harvard Business Review, May, (originally published 1985, May-June, 63(3), 67-72.1

4. Christensen, C. M. and Raynor, M. E. (2003), The Innovator‟s Solution: Creating and Sustaining Successful Growth, Boston, MA: Harvard Business School Press.

5. Drucker, P. F. (1985), Innovation and Entrepreneurship, New York: Harper.