Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering
Syllabus of
Data Base Management System Lab (MEC-)
B.Tech.(V-Semester) (CBCS Scheme)(04YDC)

W.e.f. (session2018-19)

Subject Name & Code No.	Maximum Marks Allotted						Hours/ Week				
	Theory			Practical							
	End Sem Test (EST)	Mid Sem Test (MST)	Continuous Evaluation	End sem	Mid Sem	Continuous Evaluation	L	T	P	Credits	Total Marks
Data Base Management System Lab (CSE370)	---	---	---	50	---	50	2	-	4	4	100

Objective: It will help an entry-level programmer learn the introductory concepts of Relational Database Management Systems and to apply these in practice and learn how to use the *SQL* to work with databases.

Unit 1 :
Introduction to DBMS: Introduction to DBMS Concepts and Architecture, File System Organization, Advantages of DBMS, Data Models, Schemas and Instances, Data Dependency, Functions of DBA, Entities and Attributes, Entity Types, Key Attributes, Relationships, ER Data Model: Entitles and Attributes, Entity Types, Defining the E-R Diagram, Concept of Generalization, Aggregation and Specialization. Transforming ER Diagram into the Tables.

Unit 2 :
Relational Data Models: Various Data Models, Hierarchical Data Model, Network Data Model, Relational Data Model, Comparison between Three Models.
Relational Data Models, Domains, Tuples, Attributes, Relations, Characteristics of Relations, Various types of keys, super,candidate,priamary,alternate and foreign key, Relational Database, Schemas, Integrity Constraints, Triggers.

Unit 3 :
Relational Algebra : The structure, relational algebra with extended operations, modifications of Database, idea of relational calculus, basic structure of SQL, set operations, aggregate functions, null values, nested sub queries, derived relations, modification of Database, join relation.
Data Base Design Concepts, Introduction to Normalization, Various Normal Forms, Functional Dependency, FD diagram, multivalve dependencies.

Unit 4 :
Transaction Processing Concepts: Transaction System, Testing of Serilizability, Serializability of Schedules, Conflict & View Serializable Schedule, Recoverability, Recovery from Transaction Failures. Log Based Recovery. Checkpoints Deadlock Handling. Concurrency. Control Techniques: - Concurrency Control, Locking Techniques for Concurrency Control, Time Stamping Protocols, Validation Based Protocol, Multiple Granularity.
Unit 5 :
SQL/MySQL: Architecture, Physical Files, Memory Structures, Background Process. Concept of Table Spaces, Segments, Extents and Block. Dedicated Server, Multi Threaded Server. SQL Queries, Data Extraction From Single and Multiple Tables Hierarchical Queries, Inline Queries, Flashback Queries. Introduction of ANSI SQL Branching and Looping Constructs in ANSI SQL. Cursor Management: Nested and Parameterized Cursors, User Defined Functions and their Limitations.

Outcomes: Student will learn the basic concept of SQL and construct queries using SQL. Students will be familiar with the relational database theory, and be able to write relational algebra expressions for queries.

Text Books :

(1) Korth, Silbertz,Sudarshan, "Fundamental of Database System", McGraw Hill.
(2) Elmasri, Navathe, "Fundamentals Of Database Systems", Pearson Educations.
(3) Atul Kahate , " Introduction to Database Management System", Pearson Educations.

Reference Books :

(1) Date C J, "An Introduction To Database System", Pearson Educations
(2) Rob, " Data Base System:Design Implementation & Management", Cengage Learninig
(3) Oracle 9i Database Administration Fundamental-I, Volume I, Oracle Press,TMH.

Suggested List of Experiments:

(1) Creation of a database and writing SQL queries to retrieve information from the database.
(2) Delete Duplicate Row from the Table.
(3) Display the Alternate Row from Table.
(4) Delete Alternate Row from Table.
(5) Update Multiple Rows in Using Single Update Statement.
(6) Find the Third Highest Paid and Third Lowest Paid Salary.
(7) Display the 3rd, 4th, 9th Rows from Table.
(8) Display the Ename, Which is start with j, k, l or m.
(9) Show all Employees who were Hired the First Half of the Month.
(10) Write a SQL Statements for Rollback Commit and Save Points.
(11) Display Name, Hire Date of all Employees Using Cursors.
(12) Display Details of First 5 Highly Paid Employees Using Cursors.
(13) Write a Database Trigger Which fires if you try to Insert, Update, or Delete After 7 'O' Clock.
(14) Write a Data Base Trigger, Which acts just like Primary key and does not allow Duplicated Values.
(15) Create a Data Base Trigger, Which Performs the Action of the on Delete Cascade.
(16) Write a Data Base Trigger, Which Should not Delete from Emp Table if the day is Sunday.

Note: Number of Experiments may be extended to make the better understanding of subject.

Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering
Syllabus of
Fluid Power Engineering (MEC-480)
B. Tech. (V-Semester) (CBCS Scheme)(04YDC)
W.e.f. (session2018-19)

Subject Name & Code	Maximum Marks Allotted						Hours/ Week				
	Theory			Practical							
	End Sem Test (EST)	Mid Sem Test (MST)	Continuous Evaluation	End sem	Mid Sem	Continuous Evaluation	L	T	P	Credits	Total Marks
Fluid Power Engineering (MEC480)	60	30	10	--	--	--	3	-	-	3	100

COURSE OBJECTIVE: The course is designed to provide the detailed understanding of fluid power and different major equipment which can produce power from fluid.

UNIT 1. Hydropower Plant: Introduction, Major applications of hydropower plant, Classification of hydropower plant, Essential components of hydropower plant, Advantages and disadvantages of hydropower plant, selection of site for a hydropower plant.
Impact of Jet: Introduction, Force exerted on stationary plate held normal and inclined to jet, Force exerted on curved plate, force exerted on moving plate held normal and inclined in direction of moving jet, Force on a plate when vane is moving in direction of jet, jet striking on curved vane tangentially at one tip and leaving at other end, jet propulsion in ships

UNIT 2. Hydraulic Turbines: Introduction, Classification of turbines, Impulse and reaction turbines, construction, working and performance of Pelton, Francis and Kaplan Turbines, Draft tube, Governing of hydraulic turbines, Cavitation.
Centrifugal Pumps: Pump classification and selection criterion, Centrifugal pumps, Velocity vector diagrams, Pump losses and efficiencies, Net positive suction head, Pressure rise in impeller, Characteristic curves of centrifugal pumps, priming, maximum suction limit - minimum starting speed to deliver the discharge, Multistage pumps, cavitation, pump selection

UNIT 3. Reciprocating Pumps: Operation of Reciprocating pumps, discharge coefficient, volumetric efficiency, slip, work done and power required to drive reciprocating pumps, effect of air vessels, effect of friction on performance of reciprocating pump.
Reciprocating Compressors: Construction and working, Multistage, conditions for minimum work, Intercooling, Efficiency and control of air compressors

UNIT 4. Rotary Compressors: Introduction, Classification, roots blower, Vane type, Screw compressor, Scroll compressor.
Centrifugal Compressors: Essential parts, Static and total head properties, Velocity diagram, Degree of reaction, surging and choking, Losses in centrifugal compressor

UNIT 5. Axial Flow Compressors: Construction of an axial flow compressor, Aerofoil blading, Lift and drag, Performance characteristics.
Hydraulic Machines: Construction and working of hydraulic press, Hydraulic accumulator, Hydraulic intensifier, Hydraulic crane, Hydraulic jack, hydraulic lift, Hydraulic ram, Fluid couplings, Fluid torque converter and air lift pump

Outcome:

After learning the course the students should be able to:

Learn the benefits and limitations of fluid power compared with other power transmission technologies. Understand the operation and use of different hydraulic machines like hydraulic crane, fluid coupling and fluid torque convertor etc. Formulate and analyze models of hydraulic components. Design and predict the performance of fluid power components.

References:

1. Fluid Mechanics and Fluid Power Engineering by D.S. Kumar, S.K. Kataria & Sons.
2. Fluid Power Engineering by R.N. Patel and V.L. Patel Mahajan Publication
3. Fluid Mechanics and Hydraulic Machines by R.K. Bansal, Laxmi Prakashan.
4. Fluid Mechanics and Hydraulic Machines by R.K. Rajput , S.Chand & Co.
5. Turbines, Compressors and Fans by S.M. Yahya., TMH Publishers
6. Fluid Mechanics and Turbomachines by Das, Madan Mohan, PHI Lerning
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Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering

Syllabus of

Design of Machine Elements (MEC- 500)

B. Tech. (V-Semester) (CBCS Scheme)(04YDC)

W.e.f. (session201**8**-1**9**)

Subject Name & Code	Maximum Marks Allotted						Hours/ Week				
	Theory			Practical							
	End Sem Test (EST)	Mid Sem Test (MST)	Continuous Evaluation	End sem	Mid Sem	Continuous Evaluation	L	T	P	Credits	Total Marks
Design of Machine Elements (MEC500)	40	20	10	30	-	-	2	1	2	4	100

Note: PSG Design data book and/ or R. Mahadevan and Reddy's Mechanical design data book are to be provided/ permitted in exam hall (duly verified by authority)

Course Objective: 1. To develop an ability to design a system, component, or process to meet desired needs within realistic constraints.
2. To develop an ability to identify, formulate, and solve engineering problems.

UNIT 1. Stress concentration and fatigue: causes of stress concentration; stress concentration in tension, bending and torsion; reduction of stress concentration, theoretical stress concentration factor, notch sensitivity, fatigue stress concentration factor, cyclic loading, endurance limit, S-N Curve, loading factor, size factor, surface factor. Design consideration for fatigue, Goodman and modified Goodman's diagram, Soderberg equation, Gerber parabola, design for finite life, cumulative fatigue damage factor.

UNIT 2. Journal Bearing: Types of lubrication, viscosity, hydrodynamic theory, design factors, temperature and viscosity considerations, Reynold's equation, stable and unstable operation, heat dissipation and thermal equilibrium, boundary lubrication, dimensionless numbers, Design of journal bearings, Rolling-element Bearings: Types of rolling contact bearing, bearing friction and power loss, bearing life; Radial, thrust & axial loads; Static & dynamic load capacities; Selection of ball and roller bearings; lubrication and sealing.

UNIT 3. Springs: Design of helical compression and tension springs, consideration of dimensional and functional constraints, leaf springs and torsion springs; fatigue loading of springs, surge in spring; special springs

UNIT 4. Shafts: Design of shaft under combined bending, twisting and axial loading; shock and fatigue factors, design for rigidity; Design of shaft subjected to dynamic load; Design of keys and shaft couplings.

UNIT 5. Brakes & Clutches: Materials for friction surface, uniform pressure and uniform wear theories, Design of friction clutches: Disk , plate clutches, cone & centrifugal clutches. Design of brakes: Rope, band & block brake, Internal expending brakes, Disk brakes.

*Experiments : Design problems of each of the Machine components should separately be solved in the classroom with the help of design data book and be learnt practically on the components in the laboratory .

Outcome:
1. Demonstrate knowledge on basic machine elements used in machine design; design machine elements to withstand the loads and deformations for a given application, while considering additional specifications.
2. Be able to approach a design problem successfully, taking decisions when there is not a unique answer.

References:

1. Shingley J.E; Machine Design; TMH
2. Sharma and Purohit; Design of Machine elements; PHI
3. V B Bhandari, Design Of Machine Elements, Tata McGraw-Hill Education

4. R.S. Khurmi ; Machine Design, S. Chand
5. Ganesh Babu K and Srithar k; Design of Machine Elements; TMH
6. Dr. Sharma & Agrawal; Machine Design; Kataria & sons

Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering
Syllabus of
Dynamics of Machine (MEC 510)
B. Tech. (V-Semester) (CBCS Scheme)(04YDC)
W.e.f. (session2018-19)

Subject Name & Code	Maximum Marks Allotted						Hours/ Week				
	Theory			Practical							
	End Sem Test (EST)	Mid Sem Test (MST)	Continuous Evaluation	End sem	Mid Sem	Continuous Evaluation	L	T	P	Credits	Total Marks
Dynamics of Machine (MEC510)	40	20	10	30	-	-	2	1	2	4	100

Course Objective:-
1. To understand the force-motion relationship in components subjected to External Forces
2. To analyse the force-motion characteristics of standard mechanisms
3. To study the undesirable effects of unbalances resulting from prescribed motions in mechanism.

Unit 1: Dynamics of Engine Mechanisms: Displacement, velocity and acceleration of piston; turning moment on crankshaft, turning moment diagram; fluctuation of crankshaft speed, analysis of flywheel.

Unit 2: Governor Mechanisms: Types of governors, characteristics of centrifugal governors, gravity and spring controlled centrifugal governors, hunting of centrifugal governors, inertia governors.

Unit 3: Balancing of Inertia Forces and Moments in Machines: Balancing of rotating masses, two plane balancing, determination of balancing masses (graphical and analytical methods), balancing of rotors, balancing of internal combustion engines (single cylinder engines, in-line engines, V-twin engines, radial engines, Lanchester technique of engine balancing.

Unit 4: Friction: Frictional torque in pivots and collars by uniform pressure and uniform wear rate criteria. Boundary and fluid film lubrication, friction in journal and thrust bearings, concept of friction circle and axis, rolling friction. Clutches: Single plate and multi plate clutches, Cone clutches.

Unit 5: Brakes: Band brake, block brakes, Internal and external shoe brakes, braking of vehicles. Dynamometer: Different types and their applications. Dynamic Analysis of Cams: Response of un-damped cam mechanism (analytical method), follower response analysis by phase-plane method, jump and cross-over shock.

List of Experiments:

1. To study the different types of centrifugal and inertia governors and demonstrate any one.
2. To find experimentally the Gyroscopic couple on Motorized Gyroscope and compare with applied couple.
3. To study the different types of brakes.
4. To find out critical speed experimentally and to compare the Whirling Speed of a shaft with theoretical values.
5. To determine experimentally, the Moment of Inertia of a Flywheel and Axle compare with the theoretical values.
6. To calculate the torque on a Planet Carrier and torque on internal gear using epicyclic gear train and holding torque apparatus.
7. To perform the experiment of Balancing of rotating parts and find the unbalanced couple and forces.
8. To find out experimentally the coriolli's and component of acceleration and compare with theoretical values.
9. To study various types of gear- Helical, cross helical, worm, bevel gear.
10. To study the various types of dynamometers.

Course Outcomes: On successful completion of the course, the student will be able to

1. Learn about Dynamics of Engine Mechanisms
2. Balancing
3. Friction
4. Brakes

References:
1. Ambekar, AG; Mechanism and Machine Theory; PHI
2. Rattan SS; Theory of machines; TMH
3. Sharma and Purohit; Design of Machine elements; PHI
4. Bevan; Theory of Machines;
5. Ghosh and Mallik; Theory of Mechanisms and Machines; Affiliated East-West Press, Delhi
6. Norton RL; kinematics and dynamics of machinery; TMH
7. Grover; Mechanical Vibrations
8. Balaney; Theory of Machines by
9. Theory of Vibrations by Thomson
10. Rao, J.S. and Gupta, K., Introductory Course on Theory and Practice of Mechanical Vibration, New Age International Pvt. Ltd., 2004.

Mandsaur University, Mandsaur (M.P.)

Department of Mechanical   Engineering
Syllabus of
Measurement & Metrology (MEC-490)
B. Tech . (V-Semester) (CBCS Scheme)(04YDC)
W.e.f. (session2018-19)

Subject Name & Code	Maximum Marks Allotted						Hours/ Week				
	Theory			Practical							
	End Sem Test (EST)	Mid Sem Test (MST)	Continuous Evaluation	End sem	Mid Sem	Continuous Evaluation	L	T	P	Credits	Total Marks
Measurement & Metrology (MEC520)	40	20	10	30	-	-	2	1	2	4	100

Course Objective:

Measurement and Metrology deals with the applications of instrumentation science in Mechanical Engineering. It provides a means of assessing the suitability of measuring instruments, their calibration, and the quality control of manufactured products. A product that is not manufactured according to   specifications will have to incur heavy costs of comply with the specifications later. Since measurement is the basic parameter of quality control .

Unit 1: Mechanical Measurement: Need of mechanical measurement, Basic definitions: Hysteresis, Linearity, Resolution of measuring instruments, Threshold, Drift, Zero stability, loading effect and system response. Measurement methods, Generalized Measurement system, Static performance characteristics, Errors and their classification.

Unit 2: Measurement of Force, Torque and Strain: Force measurement: load cells, cantilever beams, proving rings, differential transformers. Measurement of torque: Torsion bar dynamometer, servo controlled dynamometer, absorption dynamometers. Power Measurements. Measurement of strain: Mechanical strain gauges, electrical strain gauges, strain gauge: materials, gauge factors, theory of strain gauges and method of measurement, bridge arrangement, temperature compensation.

Unit 3: Temperature measurement: Temperature Measuring Devices: Thermocouples, Resistance Temperature Detectors, Thermistor, Liquid in glass Thermometers, Pressure Thermometers, Pyrometer, Bimetallic strip Calibration of temperature measuring devices, Numerical Examples on Flow Measurement

Unit 4: Linear and angular measurements: Linear Measurement Instruments, Vernier caliper, Micrometer, Interval measurements: Slip gauges, Checking of slip gauges for surface quality, Optical   flat, Limit gauges,   Problems   on measurements with gauge, Angular Measurement: study of angular measuring instruments like bevel protector, sine bars.

Unit 5: Metrology: Basics of Metrology, Need for Inspection, Accuracy and Precision, Objectives, Standards of measurements. Construction and working of Dial test indicator, advantages and uses, Terminology of limits and fits, Tolerances and allowances (Unilateral and bi lateral system), Hole and shaft basis systems.

Course Outcome:
After learning the course the students should be able to: Students will describe basic concepts of Metrology, Students will select linear measuring instrument for measurement of various component, Students select angular and taper measurement devices for measurement of various components, Students will discriminate between various screws by measuring their dimensions.

List of Experiments(expandable) :
1. Calibration of thermo couples.
2. Study of various temperature measuring devices; thermo couple, RTD, gas thermometers.
3. Study of various pressure measuring devices like manometers, mercury in glass pressure   gauge.
4. Measuring velocity of fluid flow by Ventura meter/ orifice meter/ pitot tube.
5. Experiment on Vernier caliper.
6. Experiment on Screw Gauge

References:

1. Nakra and Chowdhry; Measurement and Control; TMH
2. Figiola RS & Beasley DE; Theory and Design for Mechanical Measurements; 3e John Wiley
3. Katsuhiko Ogata; Modern Control Engineering, 4e Pearson Education, New Delhi
4. Gopal; Control Systems Principles and Design; Tata McGraw Hill, New Delhi.
5. Backwith and Buck; Mechanical Measurements.
6. Swahney; Metrology and Instrumentation;

Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering
Syllabus of
Elective-I Engineering Economics & Management (MEC-492)
B.Tech.(V-Semester) (CBCS Scheme)(04YDC)

W.e.f. (session2018-19)

Subject Name & Code	Maximum Marks Allotted						Hours/ Week				
	Theory			Practical							
	End Sem Test (EST)	Mid Sem Test (MST)	Continuous Evaluation	End sem	Mid Sem	Continuous Evaluation	L	T	P	Credits	Total Marks
Elective-I Engineering Economics & Management (MEC492)	60	30	10	-	-	-	3	-	-	3	100

Course Objective: The course is intended to provide basic understanding of Economics and Management to engineering students with following aspects:

To impart knowledge, with respect to concepts, principles and practical applications of Economics, which govern the functioning of a firm/organization under different market conditions

Unit 1

Introduction to Economics; Definitions, Nature, Scope, Difference between Microeconomics & Macroeconomics Theory of Demand & Supply; meaning, determinants, law of demand, law of supply, equilibrium between demand & supply Elasticity; elasticity of demand, price elasticity, income elasticity, cross elasticity

Unit 2

Theory of production; production function, meaning, factors of production (meaning & characteristics of Land, Labour, capital & entrepreneur), Law of variable proportions & law of returns to scale Cost; meaning, short run & long run cost, fixed cost, variable cost, total cost, average cost, marginal cost, opportunity cost. Break even analysis; meaning, explanation, numerical.

Unit 3

Introduction to Management; Definitions, Nature, scope Management & administration, skill, types and roles of managers, Functions of Management; Planning, Organizing, Staffing, Directing, Controlling (meaning, nature and importance) Organizational Structures; meaning, principles of organization, types-formal and informal, line, line & staff, matrix, hybrid (explanation with merits and demerits), span of control, departmentalization.

Unit 4

Functions of Management; Planning, Organizing, Staffing, Directing, Controlling (meaning, nature and importance) Organizational Structures; meaning, principles of organization, types-formal and informal, line, line & staff, matrix, hybrid (explanation with merits and demerits), span of control, departmentalization

Unit 5

Introduction to Production Management; definitions, objectives, functions, plant layout-types & factors affecting it, plant location- factors affecting it. Introduction to Human Resource Management; definitions, objectives of manpower planning, process, sources of recruitment, process of selection

Reference:

1. Engineering Economics, R.Paneerselvam, PHI publication
2. Fundamentals of Management: Essential Concepts and Applications, Pearson Education, Robbins S.P. and Decenzo David A.
3. Economics: Principles of Economics, N Gregory Mankiw, Cengage Learning
4. Principles and Practices of Management by L.M.Prasad
5. Principles of Management by Tripathy and Reddy
6. Modern Economic Theory, By Dr. K. K. Dewett & M. H. Navalur, S. Chand Publications

Course Outcomes:

To help the students to understand the fundamental concepts and principles of management; the basic roles, skills, functions of management, various organizational structures and basic knowledge of marketing.

Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering

Syllabus of

Elective- I Mechatronics (MEC 493)

B.Tech.(V-Semester) (CBCS Scheme)(04YDC)

W.e.f. (session2018-19)

Subject Name & Code	Maximum Marks Allotted						Hours/ Week				
	Theory			Practical							
	End Sem Test (EST)	Mid Sem Test (MST)	Continuous Evaluation	End sem	Mid Sem	Continuous Evaluation	L	T	P	Credits	Total Marks
Mechatronics (MEC493)	40	20	10	30	-	-	3	-	-	3	100

Course Objective: To impart knowledge about the elements and techniques involved in Mechatronics systems which are very much essential to understand the emerging field of automation.

UNIT I   INTRODUCTION: Introduction to Mechatronics – Systems – Concepts of Mechatronics approach – Need for Mechatronics – Emerging areas of Mechatronics – Classification of Mechatronics. Sensors and Transducers: Static and dynamic Characteristics of Sensor, Potentiometers – LVDT – Capacitance sensors – Strain gauges – Eddy current sensor – Hall effect sensor – Temperature sensors – Light sensors

 UNIT II 8085 MICROPROCESSOR AND 8051 MICROCONTROLLER Introduction – Architecture of 8085 – Pin Configuration – Addressing Modes –Instruction set, Timing diagram of 8085 – Concepts of 8051 microcontroller – Block diagram,.

UNIT III PROGRAMMABLE PERIPHERAL INTERFACE Introduction – Architecture of 8255, Keyboard interfacing, LED display –interfacing, ADC and DAC interface, Temperature Control – Stepper Motor Control – Traffic Control interface.

UNIT IV PROGRAMMABLE LOGIC CONTROLLER Introduction – Basic structure – Input and output processing – Programming – Mnemonics – Timers, counters and internal relays – Data handling – Selection of PLC.

UNIT V ACTUATORS AND MECHATRONIC SYSTEM DESIGN Types of Stepper and Servo motors – Construction – Working Principle – Advantages and Disadvantages. Design process-stages of design process – Traditional and Mechatronics design concepts – Case studies of Mechatronics systems – Pick and place Robot – Engine Management system – Automatic car park barrier.

Course Outcome:

Upon completion of this course, the students can able to design Mechatronics system with the help of Microprocessor, PLC and other electrical and Electronics Circuits.

References:

1. Michael B.Histand and Davis G.Alciatore, "Introduction to Mechatronics and Measurement systems", McGraw Hill International edition, 2007.

2. Bradley D.A, Dawson D, Buru N.C and Loader A.J, "Mechatronics", Chapman and Hall, 1993.

3. Smaili.A and Mrad.F , "Mechatronics Integrated Technologies for Intelligent Machines", Oxford University Press, 2007.

4. Devadas Shetty and Richard A. Kolk, "Mechatronics Systems Design", PWS publishing company, 2007.

5. Krishna Kant, "Microprocessors & Microcontrollers", Prentice Hall of India, 2007. 6. Clarence W, de Silva, "Mechatronics" CRC Press, First Indian Re-print, 2013

Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering
Syllabus of
Elective-I Entrepreneurship and Management (MEC-491)
B. Tech. (V-Semester) (CBCS Scheme)(04YDC)

W.e.f. (session2018-19)

Subject Name & Code	Maximum Marks Allotted						Hours/ Week				
	Theory			Practical							
	End Sem Test (EST)	Mid Sem Test (MST)	Continuous Evaluation	End sem	Mid Sem	Continuous Evaluation	L	T	P	Credits	Total Marks
Elective-I Entrepreneurship and Management (MEC491)	60	30	10	-	-	-	3	-	-	3	100

Course Objective : To provide a fundamental exposure to the students on the basic concepts of management and to familiarize the basics of entrepreneurship and its development process.

Unit-I: Entrepreneurship : Definition and concepts, characteristics, comparison with manager, classification, theories of entrepreneur, socio, economic, cultural and psychological; entrepreneur traits and behavior, roles in economic growth, employment, social stability, export promotion and indigenization, creating a venture, opportunity analysis competitive and technical factors, sources of funds, entrepreneur development program.

Unit-II: Management: Importance, definition and functions; schools of theories, knowledge driven learning organization and e-business; environment, uncertainty and adaptability; corporate culture, difficulties and levels of planning, BCG matrix, SWOT analysis, steps in decision making, structured and unstructured decision; dimensions of organizations, size/specialization, behavior formalization, authority centralization, departmentalization, spam and line of control, technology and Minzberg organization typology, line, staff & matrix organization, coordination by task force, business process reengineering and process of change management, HR planning placement and training, MIS; attitudes and personality trait, overlap and differences between leader & manager, leadership grid, motivation, Maslow's need hierarchy and Herzberg two factor theory, expectation theory, learning process, team work and stress management.

Unit-III: System Concepts: Types, definition & characteristics; supra & subsystems, key component; boundary & interface complexity; feedback (pull) & feed forward (push) controls, open flexible-adaptive system, computer as closed system, law of requisite variety; system coupling, stresses and entropy; functional & cross functional system; Steven Alter's nine element work system model and its comparison with IPO (input-processing-output) model, structure and performance of work systems leading to customer delight.

Unit-IV: Marketing: Importance, definition, core concepts of need want and demand, exchange & relationships, product value, cost and satisfaction (goods and services) marketing environment; selling, marketing and societal marketing concepts; four P's, product, price, placement, promotion; consumer, business and industrial market, market targeting, advertising, publicity, CRM and market research.

Unit-V: Productivity and Operations: Productivity, standard of living and happiness, types of productivity, operations (goods and services) Vs project management, production processes and layouts, steps in method improvement, time measurement, rating and various allowances; standard time and its utility, predetermined motion and time method, product and process specification, TQM, cost of quality, introduction to lean manufacturing (JIT), QFD, TPM & six sigma quality.

Course Outcome :

1. Describe the legal, social, ethical, and economic environments of business in a global context.
2. Solve organization problems, individually and/or in teams, using quantitative, qualitative, and technology-enhanced approaches.
3. Demonstrate professional communication and behavior.
4. Apply knowledge of business concepts and functions in an integrated manner.

References :

1-Daft R; The new era of management; Cengage.
2-Bhat Anil, Arya kumar; Management: Principles ,Processes and Practices; Oxford higher edu.
3-Davis & Olson; Management Information System; TMH.
4-Steven Alter; Information systems, Pearson.
5-Kotler P; Marketing management;
6-Khan, Jain; Financial Management;
7-ILO; Work study; ILO.
8-Mohanty SK; Fundamental of Entrepreneurship; PHI.