Semester VI

Sl. No.	Category	Code No.	Course Title	Hours per week			Total Contact Hrs/Week	Credit
				L	T	P		
1	Programme core course-21	MEPC601	Design of Machine Elements	2	1	0	3	3
2	Programme core course-22	MEPC602	Production & Operations Management	2	0	0	2	2
3	Programme elective course-4 (Any One to be selected)	MEPE603/A	Elective Material Handling Systems	3	0	0	3	3
		MEPE603/B	Power Plant Engineering					
4	Humanities and Social Science course- 5	HS604	Entrepreneurship and Start-up's	3	1	0	4	4
5	Open elective-2	(Anyone to be selected from Annexure-II)		3	1	0	4	4
6	Mandatory Course-2	AU606	Indian Constitution	2	0	0	2	0
7	Major Project	MEPR607	Major Project- II	0	0	6	6	3
8	Seminar	MESE608	Seminar	2	0	0	2	1
			Total	**17**	**3**	**6**	**26**	**20**

DESIGN OF MACHINE ELEMENTS

Course Code	MEPC601
Course Title	Design of MachineElements
Number of Credits	3 (L: 2, T: 1, P: 0)
Prerequisites	Engineering Mechanics, Strength of Materials and Theory of Machines & Mechanisms
Course Category	Programme core course

Course Outcomes: - By the end of the course, the students are expected to

CO1: Analyze the various modes of failure of machine components under different load patterns.(K4)
CO2: Design and prepare part and assembly drawings.(K5)
CO3: Apply design data books and different codes of design.(K3)
CO4: Design and prepare drawings of Shafts and Spur Gears.(K5)
CO5: Design and prepare drawings of Fasteners and Ergonomics. (K5)

Course Content: -

Module- 1: Introduction to Design

Number of class hours: 6 Hrs.

Suggestive Learning Outcomes:

1) Calculate factor of safety.
2) Explain standardization.
3) Apply design data book.
4) Illustrate Theories of Elastic Failures.

Detailed content of the unit: -

Introduction to Design: Machine Design philosophy and Procedures; General Considerationsin Machine Design; Fundamentals: Types of loads, concepts of stress, Strain, Stress – StrainDiagram for Ductile and Brittle Materials, Types of Stresses; Bearing pressure Intensity; Crushing;Bending and Torsion; Principal Stresses; Simple Numerical; Creep strain and Creep Curve; Fatigue;S-N curve; Endurance Limit; Factor of Safety and Factors governing selection of factor of Safety;StressConcentration: Causes & Remedies; Converting actual load or torque into design load or torque usingdesign factors like velocity factor, factor of safety & service factor; Properties of Engineering materials;Designation of materials as per IS and introduction to International standards & advantages ofstandardization; Use of design data book; Use of standards in design and preferred numbers series;Theories of Elastic Failures; Principal normal stress theory; Maximum shear stress theory & Maximumdistortion energy theory.

Module- 2: Design of simple machine parts and Antifriction Bearings

Number of class hours: 6 Hrs.

Suggestive Learning Outcomes:

1) Design and draw Cotter Joint; Knuckle Joint.
2) Design Simple machine parts**.**
3) Classify different types of bearing.

Detailed content of the unit: -

Design of simple machine parts: Cotter Joint; Knuckle Joint; Turnbuckle; Design of Levers:Hand/Foot Lever & Bell Crank Lever; Design of C–Clamp; Off-set links; Overhang Crank; Arm of Pulley.
Antifriction Bearings: Classification of Bearings; Sliding contact & Rolling contact; Terminology ofBall bearings: Life Load relationship, Basic static load rating and Basic dynamic load rating, limitingspeed; Selection of ball bearings using manufacturer's catalogue.

Module- 3: Design of Shafts, Keys, Couplings and Spur Gears

Number of class hours: 6 Hrs.

Suggestive Learning Outcomes:

1) Design and draw Shafts, Keys, Couplings
2) Design spur gears.

Detailed content of the unit: -

Design of Shafts, Keys, Couplings and Spur Gears: Types of Shafts; Shaft materials; Standard Sizes; Design of Shafts (Hollow and Solid) using strength and rigidity criteria; ASME code ofdesign for line shafts supported between bearings with one or two pulleys in between or one overhungpulley; Design of Sunk Keys; Effect of Keyways on strength of shaft; Design of Couplings – MuffCoupling, Protected type Flange Coupling, Bush-pin type flexible coupling; Spur gear design considerations;Lewis equation for static beam strength of spur gear teeth; Power transmission capacity ofspur gears in bending. 9001:2008 Quality Management System Registration/Certification procedure; Benefits of ISO to the organization

Module- 4: Design of Power Screws and Design of springs

Number of class hours: 6 Hrs.

Suggestive Learning Outcomes:

1) Design the Screw Jack; Toggle Jack.

2) Classify different types of springs.
3) Design the Helical springs.

Detailed content of the unit: -

Design of Power Screws: Thread Profiles used for power Screws - Relative merits and demeritsof each; Torque required to overcome thread friction; Self-locking and overhauling property; Efficiency of power screws; Types of stresses induced; Design of Screw Jack; Toggle Jack.
Design of springs: Classification and Applications of Springs; Spring terminology; Materials andSpecifications; Stresses in springs; Wahl's correction factor; Deflection of springs; Energy stored insprings; Design of Helical, Tension and Compression springs subjected to uniform applied loads likeI.C. engine valves, Weighing balance, Railway buffers and Governor springs; Leaf springs: Constructionand Application.

Module- 5: Design of Fasteners and Ergonomics & Aesthetic consideration in design

Number of class hours: 6 Hrs.

Suggestive Learning Outcomes:

1) Describe Stresses in Screwed fasteners
2) Design the bolted joints.
3) Analyse the Ergonomics of Design.

Detailed content of the unit: -

Design of Fasteners: Stresses in Screwed fasteners; Bolts of Uniform Strength; Design ofBolted Joints subjected to eccentric loading; Design of Parallel and Transverse fillet welds; axiallyloaded symmetrical section; Merits and demerits of screwed and welded joints.
Ergonomics & Aesthetic consideration in design: Ergonomics of Design: Man–Machine relationship;Design of Equipment for control, environment & safety; Aesthetic considerations regardingshape, size, color & surface finish.

Reference Books:
1. Machine Design – Sadhu Singh, Khanna Book Publishing Co., Delhi (ISBN: 978-9382609-575)
2. Machine Design Data Book – Sadhu Singh, Revised Edition, Khanna Book Publishing Co, Delhi(ISBN: 978-9382609-513)
3. Introduction to Machine Design – V.B.Bhandari, Tata Mc- Graw Hill, New Delhi.
4. Mechanical Engineering Design – Joseph Edward Shigley, Tata Mc- Graw Hill, New Delhi.
5. Machine design – Pandya & Shah, Dhanpat Rai & Son,New Delhi.
6. Machine design – R.K.Jain, Khanna Publication, New Delhi.
7. Design Data Book – PSG Coimbtore, PSG Coimbtore.

8. Hand Book of Properties of Engineering Materials & Design Data for Machine Elements – AbdullaShariff, Dhanpat Rai & Sons, New Delhi.

PRODUCTION & OPERATIONS MANAGEMENT

Course Code	MEPC602
Course Title	Production & Operations Management
Number of Credits	2 (L: 2, T: 0, P: 0)
Prerequisites	Nil
Course Category	Programme core course

Course Outcomes: - By the end of the course, the students are expected to

CO1: Define operations management and explain its relationship to productivity and also understand tools and techniques (K1).
CO2: Describe the importance of forecasting and explain the effective application of the different forecasting approaches and methods (K2).
CO3: Explain layout strategy and how operations managers determine facility arrangements and size (K3).
CO4: Describe how operations managers achieve a reasonable work environment and set expectations related to employee productivity (K3).
CO5: Understand make-or-buy decisions and the selection and integration of suppliers. And calculate how much to order and when to order (K2).

Course Content: -

Module- 1: Process Planning and Process Engineering:
Number of class hours: 5 hrs.

Suggestive Learning Outcomes:
1) Describe Process Planning.
2) Determine the Principal Process.
3) Distinguish Dimensional Analysis from Tolerance Analysis.

Detailed content of the unit: -

Process Planning and Process Engineering: Process Planning: Introduction, Function, Pre-requisites and steps in process planning, Factors affecting process planning, Make or buy decision, plant capacity and machine capacity. Process Engineering: Preliminary Part Print Analysis: Introduction, Establishing the General Characteristics of work piece, determining the principal Process, Functional surfaces of the work piece, Nature of the work to be Performed,

Finishing and identifying operations. Dimensional Analysis: Introduction, types of dimensions, measuring the Geometry of form, Baselines, Direction of specific dimensions. Tolerance Analysis: Causes of work piece variation, Terms used in work piece dimensions, Tolerance stacks. Work piece Control: Introduction, Equilibrium Theories, Concept of location, Geometric Control, Dimensional control, Mechanical control.

Module- 2: Production Forecasting and Scheduling:

Number of class hours: 5 hrs

Suggestive Learning Outcomes:
1) Describe various Forecasting methods.
2) Evaluate the importance of scheduling. Compare scheduling and sequencing

Detailed content of the unit: - 4 hrs
Production Forecasting: Introduction of production forecasting, The strategic role of forecasting in supply chain, Time frame, Demand behaviour, Forecasting methods- Qualitative and Quantitative, Forecast accuracy.
Scheduling:
Introduction, Objectives in scheduling, Loading, Sequencing, Monitoring, Advanced Planning and Scheduling Systems, Theory of Constraints, Employee scheduling

Module-3: Break-Even Analysis and Aggregate Operations Planning:
Number of class hours: 5 hrs

Suggestive Learning Outcomes:
1) Understand Break-even analysis.
2) Apply Break-even analysis charts.
3) Compare different Aggregate production planning.

Break-Even Analysis: Introduction, Break-even analysis charts, Break even analysis for process, plant and equipment selection.
Aggregate Operations Planning: Aggregate production planning, Adjusting capacity to meet the demand, Demand management, Hierarchical and collaborative planning, aggregate planning for services.

Module-4: Assembly Line Balancing
Number of class hours: 5 hrs

Suggestive Learning Outcomes:
1) Illustrate Assembly lines, Assembly line balancing.
2) Describe different line layouts.

Assembly Line Balancing: Assembly lines, Assembly line balancing, Splitting tasks, Flexible and U-shaped line layouts, mixed model line balancing, current thoughts on assembly lines, computerized assembly line balancing.

Module- 5: Material Management:
Number of class hours: 5 hrs

Suggestive Learning Outcomes:
1) Understand Purchasing and Stores.
2) Explain policies and procedures of material management.

Material Management: Introduction, Importance and objectives, Purchasing and Stores: policies and procedures, Vendor development, selection, analysis and rating.

References:

1. Production and Operations Management – K. Aswathappa, K.Shridhara Bhat, Himalaya Publishing House, 2014.
2. Production and Operations Management – Shailendra Kale, McGraw Hill Educations (India) Private Limited, 2013.
3. Production and Operations Management – R. Paneerselvam, PHI Learning Private Limited, 2013.
4. Operations Management – Joseph Monk, TMH Publishers, New Delhi, 2004.
5. Modern Production /Operations Management – Buffa Elwood S, John Wiley Publishers, Singapore, 2002.

MATERIAL HANDLING SYSTEMS

Course Code	MEPE603/A
Course Title	Material Handling Systems
Number of Credits	3(L: 3, T: 0 P: 0)
Prerequisites	NIL
Course Category	Programme elective course

Course Outcomes: -At the end of the course, the student will be able to:

CO1: Understand constructional & operational features of various materials handling systems. [K1]

CO2: Identify, compare & select proper material handling equipment for specified applications. [K3]

CO3: Know the controls & safety measures incorporated on material handling equipment. [K2]

CO4: Appreciate the role of material handling devices in mechanization & automation of industrial process. [K3]

CO5: Understand & appreciate safety instrumentation for equipment. [K2]

Course Content: -

Module- 1:Introduction to Material Handling System
Number of class hours: 6 Hrs.
Suggestive Learning Outcomes:
1) Describe the concept of material handling.
2) Explain modern trends in Materials handling.

Introduction to Material Handling System: Main types of Material handling equipments& their applications; Types of load to be handled; Types of Movements; Methods of stacking, loading & unloading systems; Principles of Material Handling Systems; Modern trends in Materials handling.

Module-2:Hoisting Machinery &Equipments
Number of class hours: 6 Hrs.
Suggestive Learning Outcomes:
1) Describe the construction, working & maintenance of different types of hoists.
2) Explain the construction, working & maintenance of different types of cranes.
3) Describe the construction, working & maintenance of different types of elevating equipments.

Hoisting Machinery &Equipments: Construction, Working & Maintenance of different types of hoists such as Lever operated hoist, Portable hand chain hoist, Differential hoists, Worm geared and Spur geared hoists, Electric & Pneumatic hoists, Jumper; Construction, Working & Maintenance of different types of cranes such as Rotary cranes, Trackless cranes, Mobile cranes, Bridge cranes, Cable cranes, Floating cranes & Cranes travelling on guide rails; Construction, Working & Maintenance of Elevating equipments such as Stackers, Industrial lifts, Freight elevators, Passenger lifts, and Mast type's elevators, Vertical skip hoist elevators.

Module-3:Conveying Machinery and Surface Transportation Equipment
Number of class hours: 6 Hrs.
Suggestive Learning Outcomes:
1) Explain the construction, working & maintenance of various traction type conveyors and traction less type conveyors.
2) Explain the construction, function& workingof different types of traction less equipment and cross handling equipment.

Conveying Machinery: Construction, Working & Maintenance of Traction type conveyors such as Belt conveyors, Chain conveyors, Bucket elevators, Escalators; Construction, Working & Maintenance of Traction less type conveyors such as Gravity type conveyors, Vibrating & Oscillating conveyors, Screw conveyors, Pneumatic & Hydraulic conveyors, Hoppers gates & Feeders.267 Mechanical Engineering Curriculum Structure

Surface Transportation Equipment: Construction, Function, Working of Trackless equipment such as Hand operated trucks, Powered trucks, Tractors, Automatic Guided vehicle, Industrial Trailers; Construction, Function, Working of Cross handling equipment such as Winches, Capstans, Turntables, Transfer tables, Monorail conveyors.

Module- 4:Components of Material Handling Systems and Load handling attachments
Number of class hours: 6 Hrs.
Suggestive Learning Outcomes:
1) Explain the different components of material handling systems.
2) Describe the construction and working of different types of Load handling attachments.

Components of Material Handling Systems: Flexible hoisting appliances such as Welded load chains, Roller chains, Hemp ropes, Steel wire ropes, Fastening methods of wire & chains, Eye bolts, Lifting tackles, Lifting & Rigging practices;

Load handling attachments: a) Various types of hooks-Forged, Triangular eye hooks, Appliances for suspending hooks b) Crane grab for unit & piece loads c) Electric lifting magnet, vacuum lifter. d) Grabbing attachment for loose materials e) Crane attachment for handling liquids/molten metals; Construction & Working of Arresting gear & Brakes; Construction & use of electromagnetic shoe brakes, Thrusters operated shoe brakes, Control brakes.

Module- 5:Mechanism used in Material Handling Equipment and Selection of Material Handling Equipment

Number of class hours: 6 Hrs.
Suggestive Learning Outcomes:
1) Demonstrate the basics of Mechanism used in Material Handling Equipment
2) Explain the concept of selection of material handling equipment.

Mechanism used in Material Handling Equipment: Steady state motion; Starting & stopping of motion in following mechanisms: Hoisting mechanism, Lifting Mechanism, Travelling Mechanism, Slewing Mechanism, Rope & chain operated Cross- Traverse Mechanism.

Selection of Material Handling Equipment: Factors affecting choice of material handling equipment such as Type of loads, Hourly capacity of the unit, Direction & length of travel, Methods of stocking at initial, final & intermediate points, Nature of production process involved, Specific load conditions & Economics of material handling system.

Reference Books:
1. Material handling (Principles & Practice) – Allegri T. H., CBS Publisher, New Delhi.
2. Plant Layout & Materials Handling – Apple J. M., JohnWiley Publishers.
3. Material Handling Equipment – N. Rundenko, Peace Publisher, Moscow.

4. Material Handling Equipment – M. P. Alexandrov, MIR Publisher, Moscow.
5. Material Handling Equipment – Y. I. Oberman, MIR Publisher, Moscow.

POWER PLANT ENGINEERING

Course Code	MEPE603/B
Course Title	Power Plant Engineering
Number of Credits	3(L: 3, T: 0, P: 0)
Prerequisites	Thermal Engineering – I (MEPC302)
Course Category	Programme elective course

Course Outcomes: - By the end of the course, the students are expected to

CO1: Describe the location of power plant and classify the power plants. (K2)
CO2: Enlist various load terminologies in power plants. (K1)
CO3: Explain the working of hydroelectric power plant. (K2)
CO4: Summarize the working principles of diesel, gas and nuclear power plants. (K2)
CO5: Recognize the issues and necessity of safety concepts of power plants. (K1)

Course Content: -

Module- I: Introduction to Power plant

Number of class hours: 6 Hrs.

Suggestive Learning Outcomes:

1) Familiarized with the present and future power scenario of India.
2) Describe the location of power plant.
3) Classify the power plants.

Detailed content of the unit: -

Introduction to power plant; Indian Energy scenario in India; Location of power plant; Choice of Power plant; Classification of power plants.

Module- II: Economics of power plant

Number of class hours: 6 Hrs.

Suggestive Learning Outcomes:

1) Describe various factor affecting the operation of power plant
2) Explain the methods of meeting the fluctuating load in power plant.
3) Discuss the performance and operatingcharacteristics of power plant.

Detailed content of the unit: -

Terminology used in power plant: Peak load, Base load, Load factor, Load curve; Various factor affecting the operation of power plant; Methods of meeting the fluctuating load in power plant; Load sharing- cost of power-tariff methods; Performance and operating characteristics of power plant.

Module- III: Hydro power plant
Number of class hours: 6 Hrs

Suggestive Learning Outcomes:

1) Understand hydrograph and flow duration curve.
2) Classify the hydroelectric power plant.
3) Describe the advantage and disadvantage of hydroelectric power plant.

Detailed content of the unit: -

Introduction to Hydroelectric power plant; Rainfall, Runoff and its measurement, Hydrograph, flow duration curve; Selection of sites for hydroelectric power plant; General layout of Hydroelectric power plant and its working; Classification of the Plant-Run off river plant, storage river plant, pumped storage plant; Advantages and disadvantages of hydroelectric power plant.

Module- IV: Diesel, gas turbine and nuclear power plant

Number of class hours: 6 Hrs

Suggestive Learning Outcomes:

1) Describe the components of diesel power plant.
2) Explain the working of gas turbine power plant.
3) Understand the working of a nuclear power plant.

Detailed content of the unit: -

The layout of diesel power plant; Components and the working of diesel power plant; Advantages and disadvantages of diesel power plant; Gas turbine power Plant-Schematic diagram, components and its working; Combined cycle power generation- Combined gas and steam turbine power plant operation (only flow diagram). Introduction; Nuclear Power-Radio Activity-Radioactive charge-types of reactions; Working of a nuclear power plant; Thermal fission Reactors- PWR, BWR and gas cooled reactors; Advantages and Disadvantages of Nuclear power plant.

Module- V: Environmental impact of power plant and power plant safety
Number of class hours: 6 Hrs

Suggestive Learning Outcomes:

1) Discuss the social and economical issues of power plant.
2) Describe the safety policy to be observed in power plants.
3) Identify the statutory provision related to boiler operation.

Detailed content of the unit: -

Social and Economical issues of power plant; Greenhouse effect; Acid precipitation-Acid rain, Acid snow, Dry deposition, Acid fog; Air, water, Thermal pollution from power plants; Radiations from nuclear power plant effluents. Plant safety concept; Safety policy to be observed in power plants; Safety practices to be observed in boiler operation; Safety in oil handling system; Safety in Chemical handling system; Statutory provision related to boiler operation.

Reference Books:
1. Power plant Engineering-P.K. Nag 4th edition, Tata McGraw Hill Education, 2014.
2. Power plant Engineering – Frederick T. Morse, Litton Educational Publishing Inc. 1953.
3. A Course in Power Plant Engineering – Subhash C. Arora, S. Domakundwar, Dhanpat Rai, 1984.
4. Power Plant Engineering – P.C. Sharma, S.K.Kataria& sons, 2009.
5. Power System Engineering – R.K. Rajput, Firewell Media,2006.

ENTREPRENEURSHIP AND START-UP'S

Course Code	:	HS 604
Course Title	:	Entrepreneurship and Start-ups
Number of Credits	:	4
Prerequisites (Course code)	:	None
Course Category	:	HS

CO1 Understand the basic concepts of Entrepreneurship and Startups.

CO2 Illustrate skills of discovering business ideas, visualizing and planning a business.

CO3 Analyze market and business risk for strategy development.

CO4 Demonstrate skills of organizational management.

CO5 Exhibit knowledge of financing methods, institutions and skills for communication of ideas.

Course Content:

Unit1-Introduction and Basics of Entrepreneurship and Start–Ups

Suggestive Learning Outcomes:

(1) Describe the Basic Elements of Entrepreneur and Entrepreneurship

(2) Distinguish between Entrepreneur, Manager and Intrapreneur

Content:

- Definitions, Traits of an entrepreneur, Factors influencing entrepreneurship, Types and Functions of Entrepreneurs, Need for promotion of entrepreneurship, Intrapreneur, Motivation
- Role of Entrepreneurs in Economic Development
- Similarities/differences between - Entrepreneur and Manager, Entrepreneur and Intrapreneur.

Unit2–Business Ideas and their implementation

Suggestive Learning Outcomes:

(1) Illustrate different Types of Business Planning and Business Structure

(2) Select specific Institutions Assisting Entrepreneur

Content:

- Discovering ideas
- Visualizing the business
- Business Plan, - Types of planning, Importance of planning, Steps in planning

- Types of Business Structures
- Institutions assisting entrepreneur

Unit3–**Idea to Start-up**

Suggestive Learning Outcomes:

(1) Identify Steps for Starting a SSI

(2) Predict the Target Market and Associated Risk

Content:

- Market analysis – Identifying the target market
- Competition evaluation and Strategy Development
- Steps for starting a small enterprise
- Risk analysis

Unit4–Management of Enterprise

Suggestive Learning Outcomes:

(1) Apply the Basic Accounting Concepts in Business

(2) Demonstrate Knowledge of Pricing, Positioning and Advertising of Products

Content:

- Recruitment and management of talent.
- Determinants of Price, Pricing methods in practice.
- Market Positioning, Advertising and Sales Promotion
- Accounting - Understanding basics of Transaction, Journal, Ledger, Cashbook, Trial Balance, Cost Sheet and Final Accounts through simple problems

Unit5-Financing and Communication of Ideas

Suggestive Learning Outcomes:

(1) Exhibit Knowledge of various Financial Institutions and Financing Methods

(2) Illustrate Business Ideas through Communication Skills

Content:

- Financial Institutions
- Financing methods available for start-ups in India
- Communication of Ideas to potential investors–Investor Pitch

SUGGESTED LEARNING RESOURCES:

S.No.	Title of Book	Author	Publication
1.	The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company	Steve Blank and Bob Dorf	K & S Ranch ISBN–978-0984999392
2.	The Lean Startup: How Today's Entre-preneurs Use Continuous Innovation to Create Radically Successful Businesses	Eric Ries	Penguin UK ISBN–978-0670921607
3.	Demand: Creating What People Love Before They Know They Want It	Adrian J. Slywotzky with Karl Weber	Headline Book Publishing ISBN–978-0755388974
4.	Entrepreneurship	Alpana Trehan	Dreamtech PressISBN: 978-93-5004-026-3
5	Marketing and Sales Management	D C Kapoor	S Chand and Company Ltd. ISBN: 81-219-2430-8
S.No.	**Title of Book**	**Author**	**Publication**

6	Business Economics	H L Ahuja	S Chand and Company Ltd. ISBN: 81-219-1791-3
7	Financial Accounting (Principles and Practice)	Jawahar Lal & Seema Srivastava	S Chand Publishing
8	Accounting for Management	N.P. Srinivasan & Sakthivel Murugan	S Chand Publishing
9	Marketing	Harsh V Verma and Ekta Duggal	Oxford University Press ISBN: 0-19-945910-X
10	Marketing (Asian Edition)	Paul Baines, Chris Fill, Kelly Page and Piyush K. Sinha	Oxford University Press
11	Entrepreneurship	Rajeev Roy	Oxford University Press ISBN: 0-19-807263-5
12	Entrepreneurship Development	Kumar S Anil	New Age Publishers
13	Human Resource Management	Uday Kumar Haldar and Juthika Sarkar	Oxford University Press
14	Fundamentals of Entrepreneurship	S K Mohanty	Prentice Hall of India Private Limited ISBN: 81-203-2867-1
15	Entrepreneurship Development	S Skhanka	S Chand and Company Ltd. ISBN: 81-219-1801-4

SUGGESTED SOFTWARE/LEARNINGWEBSITES:

a. https://www.fundable.com/learn/resources/guides/startup
b. https://corporatefinanceinstitute.com/resources/knowledge/finance/corporate- structure/
c. https://www.finder.com/small-business-finance-tips
d. https://www.profitbooks.net/funding-options-to-raise-startup-capital-for-your-business/

INDIAN CONSTITUTION

Course Code	:	AU- 606
Course Title	:	Indian Constitution
Number of Credits	:	0 (L: 2, T:0; P:0)
Prerequisites (Course code)	:	None
Course Category	:	AU

Course Outcomes:

CO1. Illustrate Preamble, Basic Structure, Fundamental Rights and Duties of Indian Constitution(K3).

CO2. Discuss the Structure of The Indian Union Government (K2).

CO3. Memorize the Role andPower of Governor, Chief Minister and Council ofMinisters and explain the role of State Secretariat (K2).

CO4. Describe the role of Local Administration (K2).

CO5. Explain the Role andFunctioning of Election Commission (K2).

Detailed Course Content:

Unit 1 – The Constitution – Introduction

Number of Class hours:06

Learning Outcomes:

1. Describe the History of the Making of the IndianConstitution (K2)
2. Illustrate Preamble and the Basic Structure of Indian Constitution (K3)
3. Illustrate the Fundamental Rights and Duties set by Indian Constitution (K3)

Detailed content of the unit:

1. The History of the Making of the IndianConstitution
2. Preamble and the Basic Structure, and itsinterpretation
3. Fundamental Rights and Duties and theirinterpretation

4. State PolicyPrinciples

Unit 2 – Union Government

Number of Class hours:06

Learning Outcomes:

1. Discuss the Structure of the IndianUnion Government (K2).
2. Memorize the Role and Power of President, Prime Minister and Council of Ministers of India (K1)
3. Explain the role of Lok Sabha and RajyaSabha (K2)

Detailed content of the unit:

1. Structure of the IndianUnion
2. President – Role andPower
3. Prime Minister and Council ofMinisters
4. Lok Sabha and RajyaSabha

Unit 3 – State Government

Number of Class hours:06

Learning Outcomes:

1. Memorize the Role and Power of Governor, Chief Minister and Council ofMinisters of a state(K1)
2. Explain the role of StateSecretariat (K2)

Detailed content of the unit:

1. Governor – Role andPower
2. Chief Minister and Council ofMinisters
3. StateSecretariat

Unit 4 – Local Administration

Number of Class hours:06

Learning Outcomes:

1. Describe the role of District Administration (K2)
2. Explain the role of MunicipalCorporation (K2)

3. Discuss the role of Zila Panchayat (K2)

Detailed content of the unit:

1. DistrictAdministration
2. MunicipalCorporation
3. Zila Panchayat

Unit 5 – Election Commission

Number of Class hours:06

Learning Outcomes:

1. Explain the Role andFunctioning of Election Commission (K2)
2. Classify the role and functioning of Chief ElectionCommissioner and State Election Commissioner (K2).

Detailed content of the unit:

1. Role andFunctioning of Election commission
2. Chief ElectionCommissioner
3. State ElectionCommission

Suggested Learning Resources:

S. No.	Title of Book	Author	Publication
1.	Ethics and Politics of the In- dian Constitution	Rajeev Bhargava	Oxford University Press, New Delhi, 2008
2.	The Constitution of India	B.L. Fadia	Sahitya Bhawan; New edition (2017)
3.	Introduction to the Consti- tution of India	DD Basu	Lexis Nexis; Twenty-Third 2018

			edition

Suggested Software/Learning Websites:

a. https://www.constitution.org/cons/india/const.html
b. http://www.legislative.gov.in/constitution-of-india
c. https://www.sci.gov.in/constitution
d. https://www.toppr.com/guides/civics/the-indian-constitution/the-constitution-of-india/

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MAJOR PROJECT- II

Course Code	MEPR-607
Course Title	Major Project
Number of Credits	3 (L: 0, T: 0, P: 6)
Prerequisites	Nil
Course Category	Project Work (PR)

Course Outcome:-

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

C.O. 1: Demonstrate a sound technical knowledge of their selected project topic and the knowledge, skills and attitudes of a professional engineer (K2).

C.O. 2: Develop the skill of working in a Team (K3).

C.O. 3: Design engineering solutions to complex problems utilising a systems approach (K6).

C.O. 4: Design the solution of an engineering project involving latest tools and techniques (K6).

C.O. 5: Develop the skill of effective communication with engineers and the community at large in written an oral forms (K3).

Course Content:-

The major project topic should be selected / chosen to ensure the satisfaction of the urgent need to establish a direct link between education, national development and productivity and thus reduce the gap between the world of work and the world of study. The course should provide the scope to develop the following by the students-

1) Develop sound knowledge about the domain of the project work.
2) Perform detailed study about various components of a project.
3) Learn to be an important member of a team for successful execution of a project work.
4) Study about methodologies and professional way of documentation and communication related to project work.
5) Develop idea about problem formulation, finding the solution of a complex engineering problem.
6) Develop project report as per the suggested format to communicate the findings of the project work.
7) Acquire the skill of effective oral communication to the fellow engineers and people in the society at large.
8) Knowledge of how to organize, scope, plan, do and act within a project thesis.
9) Familiarity with specific tools (i.e. hardware equipment and software) relevant to the project selected.
10) Demonstrate the implementation of a major project work.

SEMINAR

Course Code	MESE608
Course Title	Seminar
Number of Credits	1 (L: 0, T: 0, P: 1)
Prerequisites	Nil
Course Category	Seminar presentation

Course Outcome:-

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

C.O.1: Demonstrate a thorough and systematic understanding of a seminar topic (K2).

C.O. 2: Identify the methodologies and professional way of documentation and communication (K3).

C.O.3: Demonstrate the ability to construct a report consistent with expectations of the topic, including an appropriate organization, style, voice, and tone (K3).

C.O.4: Develop the ability to follow discussions, oral arguments, and presentations, noting main points or evidence and tracking through different comments given by the audience (K3).
C.O.5: Developthe communication skill as a speaker (K3).

Course Content:-

The seminar topics may be any aspect of the science and technology, entrepreneurship or any contemporary social issues to be solved by specific branch of engineering and technology (For example, Water logging problems in a particular city may be a seminar topic for Civil Engineering Students) must be approved by the instructor in advance.

The course should have the following-

7) Practice speaking in front of a scientific audience.
8) Explore topics in detail.
9) Research topics and organize presentations.
10) To improve as speakers, each student will receive feedback from the fellow students and the instructor.
11) PowerPoint, Key Note or overheads are acceptable media for Visual aids. Visual aids should look professional and be readable in the entire room; use spell check and proofread for typographical errors.
12) Students have to submit a hard copy contains detailed outline (4-5 pages) of their presentation and also a brief abstract (one or two paragraphs; **250 words max.**) describing their presentation.
13) Each student will give 20-minute presentations followed by 3 minutes of question-answer session.

Proposal Seminar Format for Students:

- Introduce yourself.
- Give an introduction and background information on your topic. What relevant research has been performed previously?
- State the problem(s) that remain unanswered.
- Clearly state your objectives and give the specific hypotheses you wish to test.
- Describe the methodology you will use to test your hypotheses. Be sure you fully understand your chosen methods. Give reasons why you chose these methods over other approaches.
- Present any data you have collected thus far.
- Describe what remains to be done, and what you expect to find.

Explain the significance of your findings (or potential future findings).

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