4.1 GENERIC SKILLS AND ENTREPRENEURSHIP DEVELOPMENT

L T P 3 - -

RATIONALE

Generic Skills and Entrepreneurship Development is one of the courses from "Human Science" subject area. Generic skills have emerged as an important component of employability skills, which enable an individual to become and remain employable over lifetime and to lead happy and prosperous life. Entrepreneurship development aim at developing conceptual understanding for setting-up one's own business venture/enterprise. This aspect of Human Resource Development has become equally important in the era, when wage employment prospects have become meager.

Both the subject areas are supplementary to each other and soft skills are required to be developed in diploma passouts for enhancing their employability and self confidence.

DETAILED CONTENTS

- 1. Introduction to Generic Skills
 - 1.1 Importance of Generic Skill Development (GSD)
 - 1.2 Global and Local Scenario of GSD
 - 1.3 Life Long Learning (LLL) and associated importance of GSD.

2. Managing Self

- 2.1 Knowing Self for Self Development
 - Self-concept, personality, traits, multiple intelligence such as language intelligence, numerical intelligence, psychological intelligence etc.
- 2.2 Managing Self Physical
 - Personal grooming, Health, Hygiene, Time Management
- 2.3 Managing Self Intellectual development
 - Information Search: Sources of information
 - Listening: Effective Listening
 - Speaking: Effective Oral Communication
 - Reading: Purpose of reading, different styles of reading, techniques of systematic reading; Note Taking: Importance and techniques of note taking
 - Writing: Correspondence personal and business
- Note: Practical sessions should be coupled with teaching of effective listening, speaking, reading and writing.

(8 hrs)

(4 hrs)

- 2.4 Managing Self Psychological
 - Stress, Emotions, Anxiety-concepts and significance (Exercises related to stress management)
 - Techniques to manage the above

3. Managing in Team

- 3.1 Team definition, hierarchy, team dynamics
- 3.2 Team related skills- sympathy, empathy, co-operation, concern, lead and negotiate, work well with people from culturally diverse background
- 3.3 Communication in group conversation and listening skills

4 Task Management

- 4.1 Task Initiation, Task Planning, Task execution, Task close out
- 4.2 Exercises/case studies on task planning towards development of skills for task management

5. Problem Solving

- 5.1 Prerequisites of problem solving- meaningful learning, ability to apply knowledge in problem solving
- 5.2 Different approaches for problem solving.
- 5.3 Steps followed in problem solving.
- 5.4 Exercises/case studies on problem solving.
- 6. Entrepreneurship
 - 6.1 Introduction
 - Concept/Meaning and its need
 - Competencies/qualities of an entrepreneur
 - Entrepreneurial Support System e.g., District Industry Centres (DICs), Commercial Banks, State Financial Corporations, Small Industries Service Institute (SISIs), Small Industries Development Bank of India (SIDBI), National Bank of Agriculture and Rural Development (NABARD), National Small Industries Corporation (NSIC) and other relevant institutions/organizations at State/National level.

6.2 Market Survey and Opportunity Identification (Business Planning)

- How to start a small scale industry
- Procedures for registration of small-scale industry
- List of items reserved for exclusive manufacture in small-scale industry
- Assessment of demand and supply in potential areas of growth.
- Understanding business opportunity
- Considerations in product selection
- Data collection for setting up small ventures.

(6 hrs)

(3 hrs)

(5 hrs)

(22 hrs)

6.3 Project Report Preparation

- Preliminary Project Report
- Techno-Economic Feasibility Report
- Exercises on Preparation of Project Report in a group of 3-4 students

INSTRUCTIONAL STRATEGY

This subject will require a blend of different teaching and learning methods beginning with lecture method. Some of the topics may be taught using question answer, assignment, case studies or seminar. In addition, expert lectures may be arranged from within the institution or from management organizations. Conceptual understanding of Entrepreneurship, inputs by teachers and outside experts will expose the students so as to facilitate in starting ones own business venture/enterprise. The teacher will discuss success stories and case studies with students, which in turn, will develop managerial qualities in the students. There may be guest lectures by successful diploma holding entrepreneurs and field visits also. The students may also be provided relevant text material and handouts.

RECOMMENDED BOOKS

- 1. Soft Skills for Interpersonal Communication by S. Balasubramanian Published by Orient BlackSwan, New Delhi.
- 2 Generic skill Development Manual, MSBTE, Mumbai.
- 3 Lifelong learning, Policy Brief (<u>www.oecd.orf</u>)
- 4 Lifelong learning in Global Knowledge Economy, Challenge for Developing Countries – World Bank Publication
- 5 Towards Knowledge Society, UNESCO Paris Publication
- 6 Your Personal Pinnacle of Success by DD Sharma, Sultan Chand and Sons, New Delhi
- 7 Human Learning, Ormrod
- 8 A Handbook of Entrepreneurship, Edited by BS Rathore and Dr JS Saini; Aapga Publications, Panchkula (Haryana)
- 9 Entrepreneurship Development by CB Gupta and P Srinivasan, Sultan Chand and Sons, New Delhi
- 10. Handbook of Small Scale Industry by PM Bhandari

Topic No.	Time Allotted	Marks Allotted
	(hrs)	(%)
1.	4	5
2.	8	15
3.	6	10
4.	3	10
5.	5	10
6.	22	50
Total	48	100

4.2 HYDRAULICS AND PNEUMATICS

97

L T P 4 - 2

RATIONALE

Diploma holders in this course are required to deal with problems of fluid and use of hydraulics and pneumatics in power generation. For this purpose, knowledge and skills about fluid mechanics and machinery, hydraulics and pneumatics systems are required to be imparted for enabling them to perform above functions.

DETAILED CONTENTS

1. Introduction

Fluid, types of fluid; properties of fluid viz mass density, weight density (specific weight), specific volume, capillarity, specific gravity, viscosity, compressibility, surface tension, kinematic viscosity and dynamic viscosity and their units.

- 2. Pressure and its Measurement
 - 2.1 Concept of pressure (Atmospheric Pressure, gauge pressure, absolute pressure)
 - 2.2 Pressure measuring devices: peizometer tube manometers simple Utube, differential single column, inverted U-tube, micromanometer including simple problems
 - 2.3 Bourdon pressure gauge, Diaphragm pressure gauge, dead weight pressure gauge
- 3. Flow of Fluids

Types of fluid flow – steady and unsteady, uniform and non-uniform, laminar and turbulent; rate of flow and their units; continuity equation of flow; potential energy of a flowing fluid; total head; Bernoulli's theorem (statement and proof) and its applications. Discharge measurement with the help of venturi-meter, orifice meter, pitot-tube, limitations of Bernoulli's theorem simple problems.

- 4. Flow through Pipes
 - 4.1 Definition of pipe flow, wetted perimeter, hydraulic mean depth, hydraulic gradient; loss of head due to friction; Chezy's equation and Darcy's equation of head loss (without proof), Reynold's number and its effect on pipe friction; siphon, Nozzle - definition, velocity of liquid flowing through the nozzle, power developed. Water hammer, anchor block, syphon, surge tank (concept only).
 - 4.2 Loss of head in pipes due to sudden enlargement, sudden contraction, obstruction on flow path, change of direction and pipe fittings (without proof)

(03 hrs)

(06 hrs)

(07 hrs)

(10 hrs)

5. Hydraulic System

Description, operation and application of hydraulic systems – hydraulic ram, hydraulic jack, hydraulic brake, hydraulic accumulator, hydraulic door closer, hydraulic press, selection of specification of above systems for different applications

- 6. Water Turbines and Pumps
 - 6.1 Concept of a turbine, types of turbines –impulse and reaction type (concept only), difference between them. Construction and working of pelton wheel, Francis turbine, Propeller and Kaplan turbines. Unit speed, unit power, unit discharge, specific speed of turbines, selection of turbines based on specific speed.
 - 6.2 Concept of hydraulic pump, single acting reciprocating pump (construction and operation only), vane, screw and gear pumps.
 - 6.3 Construction, working and operation of centrigual pump. Performance, efficiencies and specifications of a centrifugal pump. Trouble shooting and problems in centrifugal pumps and remedial measures, pitting, cavitation, priming.
- 7. Introduction to Oil Power Hydraulics and Pneumatics (03 hrs)
 - 7.1 Introduction to oil power hydraulics and pneumatic system
 - 7.2 Statement of Pascal law and its applications
 - 7.3 Industrial applications of oil power hydraulics and pneumatic system
 - 7.4 Cavitation
- 8. Components of Hydraulic Systems
 - 8.1 Basic components of hydraulic system, function of each component in a hydraulic circuit.
 - 8.2 Oil reservoirs, couplings, motors and pumps definition and functions of the parts,
 - 8.3 Filters- definition and purpose, classification
 - 8.4 Seals and packing- classification of seals, sealing materials.
- 9. Components of Pneumatic Systems
 - 9.1 Basic components function of each component
 - 9.2 Air compressors type, working
 - 9.3 Air cylinder types, function, single acting, double acting, rotating, non-rotating, piston type, diaphragm type, tanden cylinder, double ended cylinder, duplex cylinder.
 - 9.4 Air filter, regulator and lubricator their necessity in pneumatic circuit.
 - 9.5 Installation, maintenance and application of air cylinders.

(05 hrs)

(08 hrs)

(08 hrs)

(14 hrs)

LIST OF PRACTICALS

- 1. Measurement of pressure head by employing.
 - i) Piezometer tube
 - ii) Single and double column manometer
- 2. To find out the value of coefficient of discharge for a venturimeter.
- 3. Measurement of flow by using venturimeter.
- 4. Verification of Bernoulli's theorem.
- 5. To find coefficient of friction for a pipe (Darcy's friction).
- 6. To study hydraulic circuit of an automobile brake and hydraulic ram.
- 7. Study the working of a Pelton wheel and Francis turbine.
- 8. To study a single stage centrifugal pump for constructional details and its operation to find out its normal head and discharge.

INSTRUCTIONAL STRATEGY

- 1. Use computer based learning aids for effective teaching-learning
- 2. Expose students to real life problems
- 3. Plan assignments so as to promote problem solving abilities and develop continued learning skills

RECOMMENDED BOOKS

- 1. Fluid Mechanics by KL Kumar; S Chand and Co Ltd., Ram Nagar, New Delhi.
- 2. Hydraulics and Fluid Mechanics Machine by RS Khurmi ; S.Chand & Co. Ltd., New Delhi.
- 3. Fluid Mechanics through Problems by RJ Garde; Wiley Eastern Ltd., New Delhi.
- 4. Fluid Mechanics by Dr AK Jain, Khanna Publishers, New Delhi.
- 5. Hydraulic and Pneumatic Control by K Shammuga Sundaram, S. Chand & Co. Ltd., New Delhi
- 6. Hydraulics and Hydraulic Machinery by Dr. Jagadish Lal; Metropolitan Book Company Ltd., Delhi.
- 7. Hydraulic and Pneumatic Power and Control Design, Performance and Application by Yeaple, McGraw Hill, New York..
- 8. Pneumatic Controls by Festo Didactic; Bangalore.

9. Pneumatics Control: An Introduction to the Principles by Werner Deppert and Kurt Stoll; Vogel – Verlag.

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)	
1	03	06	
2	06	10	
3	07	10	
4	10	16	
5	05	08	
6	14	20	
7	03	06	
8	08	12	
9	08	12	
Total	64	100	

4.3 COMPUTER APPLICATIONS IN TOOL AND DIE MAKING

L T P - - 6

RATIOANLE

Catia VS is the only solution capable of addressing the complete product development process, which facilitates true collaborative engineering across the multidisciplinary extended enterprise, including style and form design, technical design, equipment and system engineering, digital mockup, analysis and simulation.

DETAILED CONTENTS

- A. Part Design
 - 1. Introduction to sketches
 - Creation of basic sketches
 - Sketch tools
 - Operating the basic profile to get desired 2D sketches
 - 2. Analysing the degree of freedom of the sketch
 - 3. Sketch based features
 - Pads, pockets, revolved and sweeped features
 - 4. Dress up features
- B. Assembly Design
 - 1. Introduction to Assembly design
 - 2. Importing the existing parts into assembly design
 - 3. Positioning the parts at their respective position
 - 4. Defining the assembly constraints
 - 5. Saving assembly into the database using save management
- C. Drafting
 - 1. Introduction to generating drafting
 - 2. Frame, title block and view generation
 - 3. Saving a drawing and its links
 - 4. Adding section views and cuts for detail information
 - 5. Annotations, text and different tools to improve the views

- D. Generating Shape Design (Surfacing)
 - 1. Wireframe creation to create skeleton for surfaces
 - 2. Creation of basic surfaces
 - Extrusion, revolving, offsets, multi-section profiles
 - 3. Surface operation
 - Retaining tools like split and trim
 - Fillets to meet the design requirement
 - 4. Assembly, relimit and connect the surface
 - 5. Analysing the quality of surface

RECOMMENDED BOOKS

www.edstechnologies.com

4.4 STRENGTH OF MATERIALS

L T P 4 - 2

RATIONALE

Diploma holders in this course are required to analyze reasons for failure of different components and select the required material for different applications. For this purpose, it is essential to teach them concepts, principles, applications and practices covering stress, strain, bending moment, shearing force, shafts, columns and springs. It is expected that efforts will be made to provide appropriate learning experiences in the use of basic principles in the solution of applied problems to develop the required competencies.

DETAILED CONTENTS

- 1. Stresses and Strains
 - 1.1. Concept of load, stresses and strain
 - 1.2. Tensile compressive and shear stresses and strains
 - 1.3. Concept of Elasticity, Elastic limit and limit of proportionality.
 - 1.3.1. Hook's Law
 - 1.3.2. Young Modulus of elasticity
 - 1.3.3. Nominal stress
 - 1.3.4. Yield point, plastic stage
 - 1.3.5 Ultimate strength and breaking stress
 - 1.3.6. Percentage elongation
 - 1.3.7. Proof stress and working stress
 - 1.3.8. Factor of safety
 - 1.3.9 Shear modulus
 - 1.4. Longitudinal and circumferential stresses in seamless thin walled cylindrical shells (derivation of these formulae not required)
- 2. Resilience
 - 2.1 Resilience, proof resilience and modulus of resilience
 - 2.2 Strain energy due to direct stresses
 - 2.3 Stresses due to gradual, sudden and falling load.
- 3. Moment of Inertia
 - 3.1. Concept of moment of inertia and second moment of area
 - 3.2 Radius of gyration

(08 hrs)

(04 hrs)

(10 hrs)

- 3.3 Theorm of perpendicual raxis and parallel axis (without derivation)
- 3.4 Second moment of area of common geometrical sections :Rectangle, Triangle, Circle (without derivation); Second moment of area for L,T and I section
- 3.5 Section modulus

4. Bending Moment and Shearing Force (10 hrs)

- 4.1 Concept of beam and form of loading
- 4.2 Concept of end supports-Roller, hinged and fixed
- 4.3 Concept of bending moment and shearing force
- 4.4 B.M. and S.F. Diagram for cantilever and simply supported beams with and without overhang subjected to concentrated and U.D.L.

5. Bending stresses

- 5.1 Concept of Bending stresses
- 5.2. Theory of simple bending
- 5.3. Use of the equation f/y = M/I = E/R
- 5.4. Concept of moment of resistance
- 5.5. Bending stress diagram
- 5.6. Calculation of maximum bending stress in beams of rectangular, circular, and T section.
- 5.7 Permissible bending stress Section modulus for rectangular, circular and symmetrical I section.
- 6 Columns
 - 6.1. Concept of column, modes of failure
 - 6.2. Types of columns
 - 6.3. Buckling load, crushing load
 - 6.4. Slenderness ratio
 - 6.5. Factors effecting strength of a column
 - 6.6 End restraints
 - 6.7 Effective length
 - 6.8 Strength of column by Euler Formula without derivation
 - 6.9. Rankine Gourdan formula (without derivation)

(06 hrs)

(08 hrs)

7. Torsion

(8 hrs)

- 7.1. Concept of torsion- difference between torque and torsion.
- 7.2. Use of torque equation for circular shaft
- 7.3. Comparison between solid and hollow shaft with regard to their strength and weight.
- 7.4. Power transmitted by shaft
- 7.5. Concept of mean and maximum torque
- 8. Springs
 - 8.1. Closed coil helical springs subjected to axial load and impact load
 - 8.2 Stress deformation
 - 8.3 Stiffness and angle of twist and strain energy
 - 8.4 Proof resilience
 - 8.5 Laminated spring (semi elliptical type only)
 - 8.6 Determination of number of plates

LIST OF PRACTICALS

- 1. Tensile test on bars of Mild steel and Aluminium.
- 2. Bending tests on a steel bar or a wooden beam.
- 3. Impact test on metals
 - a) Izod test
 - b) Charpy test
- 4. Torsion test on specimens of different metals for determining modulus of rigidity.
- 5. To determine the stiffness of a helical spring and to plot a graph between load and extension.
- 6. Hardness test on different metals.

INSTRUCTIONAL STRATEGY

- 1. Expose the students to real life problems.
- 2. Plan assignments so as to promote problem solving abilities and develop continued learning skills.

RECOMMENDED BOOKS

- 1. SOM by Birinder Singh,; Katson Publishing House, New Delhi.
- 2. SOM by RS Khurmi; S.Chand & Co; New Delhi
- 3. Elements of SOM by D.R. Malhotra & H.C.Gupta; Satya Prakashan, New Delhi.

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)	
1	08	12	
2	04	06	
3	10	16	
4	10	16	
5	06	10	
6	08	12	
7	10	16	
8	08	12	
Total	64	100	

4.5 MANUFACTURING PROCESSES - II

L T P 4 - 6

RATIONALE

Diploma holders are responsible for supervising production processes to achieve production targets and for optimal utilization of resources. For this purpose, knowledge about various machining processes and modern machining methods is required to be imparted. Hence the subject of manufacturing processes.

DETAILED CONTENTS

1. Milling

(20 hrs)

- 1.1 Specification and working principle of milling machine
- 1.2 Classification, brief description and applications of milling machines
- 1.3 Details of column and knee type milling machine
- 1.4 Milling machine accessories and attachment Arbors, adaptors, collets, vices, circular table, indexing head and tail stock, vertical milling attachment
- 1.5 Milling methods up milling and down milling
- 1.6 Identification of different milling cutters and work mandrels
- 1.7 Work holding devices
- 1.8 Milling operations face milling, angular milling, form milling, straddle milling and gang milling.
- 1.9 Cutting speed and feed, simple numerical problems.
- 1.10 Indexing on dividing heads, plain and universal dividing heads.
- 1.11 Indexing methods: direct, Plain or simple, compound, differential and angular indexing, numerical problems on indexing.
- 1.12 Thread milling
- 2 Grinding

(20 hrs)

- 2.1 Purpose of grinding
- 2.2 Various elements of grinding wheel Abrasive, Grade, structure, Bond
- 2.3 Common wheel shapes and types of wheel built up wheels, mounted wheels and diamond wheels. Specification of grinding wheels as per BIS.
- 2.4 Truing, dressing, balancing and mounting of wheel.
- 2.5 Grinding methods Surface grinding, cylindrical grinding and centreless grinding.
- 2.6 Grinding machine Cylindrical grinder, surface grinder, internal grinder, centreless grinder, tool and cutter grinder.
- 2.7 Selection of grinding wheel
- 2.8 Thread grinding.

- 3.1 Gear hobbing
- 3.2 Gear shaping
- 3.3 Gear finishing processes
- 4. Broaching
 - 4.1 Introduction
 - 4.2 Types of broaching machines Single ram and duplex ram horizontal type, vertical type pull up, pull down, push down.
 - 4.3 Elements of broach tool, broach tooth details nomenclature, types, and tool material.
- 5. Modern Machining Processes
 - 5.1 Mechanical Process Ultrasonic machining (USM): Introduction, principle, process, advantages and limitations, applications
 - 5.2 Electro Chemical Processes Electro chemical machining (ECM) Fundamental principle, process, applications, Electro chemical Grinding (ECG) – Fundamental principle, process, application
 - 5.3 Electrical Discharge Machining (EDM) Introduction, basic EDM circuit, Principle, metal removing rate, dielectric fluid, applications
 - 5.4 Laser beam machining (LBM) Introduction, machining process and applications
 - 5.5 Electro beam machining (EBM)- Introduction, principle, process and applications
 - 5.6 Plasma arc machining (PAM) and welding Introduction, principle process and applications

PRACTICAL EXERCISES

Advance Turning Shop

- 1. Exercise of boring with the help of boring bar
- 2. Exercises on internal turning on lathe machine
- 3. Exercises on internal threading on lathe machine
- 4. Exercises on external turning on lathe machine
- 5. Resharpening of single point cutting tool with given geometry

Machine Shop

- 1. Produce a rectangular block by facing on a slotting machine
- 2. Produce a rectangular slot on one face with a slotting cutter
- 3. Produce a rectangular block using a milling machine with a side and face cutter
- 4. Prepare a slot on one face using milling machine
- 5. Job on grinding machine using a surface grinder
- 6. Prepare a job on cylindrical grinding machine.
- 7. Exercise on milling machine with the help of a form cutter
- 8. Exercise on milling machine to produce a spur gear
- 9. Grinding a drill-bit on tool and cutter grinder
- 10. Exercise on dressing a grinding wheel

(06 hrs)

(10 hrs)

(08 hrs)

INSTRUCTIONAL STRATEGY

- 1. Teachers should lay special emphasis in making the students conversant with concepts, principles, procedures and practices related to various manufacturing processes.
- 2. Focus should be laid in preparing jobs using various machines/equipment in the workshop.
- 3. Use of audio-visual aids/video films should be made to show specialized operations.

RECOMMENDED BOOKS

- 1. Manufacturing Technology by Rao; Tata McGraw Hill Publishers, New Delhi.
- 2. Workshop Technology Vol. I, II, III by Chapman; Standard Publishers Distributors, New Delhi.
- 3. A Text Book of Production Engineering by P.C. Sharma; S. Chand and Company Ltd., New Delhi.
- 4. Production Technology by HMT; Tata McGraw Publishers, New Delhi.
- 5. Production Engineering and Science by Pandey and Singh; Standard Publishers Distributors, New Delhi.
- 6. Modern Machining Processes by Pandey; Tata McGraw Publishers, New Delhi.
- 7. Workshop Technology Vol-III, by R.P. Dhiman, Ishan Publications Jalandhar

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)	
1	20	30	
2	20	30	
3	08	14	
<u>4</u> 5	06	10 16	
	10		
Total	64	100	

4.6 JIGS, FIXTURES AND GAUGES-DESIGN AND DRAWING

110

L T P 3 - 4

RATIONALE

Knowledge regarding design & drawing of jigs, fixtures and gauges is essential as fixtures help to achieve mass production of components/parts at relatively low cost. The subject enables the students to know about the practices being adopted for design of jigs, fixtures & gauges.

DETAILED CONTENTS

Section A

1. Jigs and Fixtures (05 hrs)

Concept of jigs & fixtures, need and advantages, concept of interchangeability, classification of jigs & fixtures.

2. Location and Clamping Devices (07 hrs)

Basic principles of location, 3-2-1 principle of location, location for various services, location methods and devices. Concept of clamping and various clamping devices.

3. Drilling Jigs (10 hrs)

Definition of drilling jig. Drilling jig, Drilling bushes & their function. Types of drilling jigs such as box type, channel jig, latch jig, indexing jig.

4. Fixtures (12 hrs)

Introduction to fixtures, types of fixtures such as milling fixture (single piece, gang milling) lathe and boring fixtures, grinding and welding fixture. Application of pneumatic in jigs and fixtures.

5. Gauges (14 hrs)

Introduction, classification and application of gauges. Plain limit gauges and their designing parameters. Design and drawing of plain limit gauge.

Section B

- 6. Design and drawing of drilling jigs (at least 2 sheets)
- 7. Design and drawing of fixtures for milling (at least 2 sheets)
- 8 Design and drawing of limit gauges such as plug gauge, ring gauge and snap gauge (at least 1 each).

Note* The question paper on this subject will consist of two parts:

Section A will contain theory part to the extent of 50%. Section B will contain design & drawing to the extent of 50%.

At least, 2 Industrial visits should be arranged in the related industry.

RECOMMENDED BOOKS

- 1. Prakash H Joshi, Press tools design & construction, Wheeler Publisher.
- 2. Donaldson, Fundamental of tool design.
- 3. Surrender Kr & Umesh Chandra, Production Engg. & Design, Satya Parkashan, New Delhi.
- 4. D. Engene Ostergard, Basic Die Making; Mc Graw Hill Book Co.
- 5. ASTME, "Fundamentals of Tool Design".
- 6. Handbook of Fixture Design, by Frank W. Wilson; McGraw Hill Book Company.

Topic No.	Time Allotted(hrs)	Marks Allotted (%)	
1	5	10	
2	7	14	
3	10	20	
4	12	24	
5	14	32	
Total	48	100	

ENTREPRENEURIAL AWARENESS CAMP

This is to be organized at a stretch for two to three days during fourth semester. Lectures will be delivered on the following broad topics. There will be no examination for this subject

- 1. Who is an entrepreneur?
- 2. Need for entrepreneurship, entrepreneurial career and wage employment
- 3. Scenario of development of small scale industries in India
- 4. Entrepreneurial history in India, Indian values and entrepreneurship
- 5. Assistance from District Industries Centres, Commercial Banks. State Financial Corporations, Small industries Service Institutes, Research and Development Laboratories and other financial and development corporations
- 6. Considerations for product selection
- 7. Opportunities for business, service and industrial ventures
- 8. Learning from Indian experiences in entrepreneurship (Interaction with successful entrepreneurs)
- 9. Legal aspects of small business
- 10. Managerial aspects of small business

INDUSTRIAL TRAINING

Industrial Training aims at exposing the students to field practices, size and scale of operation and work culture at practical sites. For this purpose, students at the end of fourth semester are required to be sent for a period of 4 weeks to industry.

Each student is supposed to study the material and technology used at site and prepares a detailed report of the observation of process seen by him/her. These students should be supervised and guided by respective subject teachers. Each teacher may guide a group of four to five students.

The teacher along with field supervisors will conduct performance assessment of students. The components of evaluation will include the following.

a)	Punctuality and regularity	15%
b)	Initiative in learning new things	15%
c)	Relationship with workers	15%
d)	Industrial training report	55%