

Programme Structure

**School of Engineering &
Technology**

**Diploma in Mechanical
Engineering**

Programme Code: 0104

Batch: 2023-2026

Vision of the University

To be recognized as an Institution of excellence, facilitating learning, fostering creativity, knowledge creation, innovations, consultancy and leadership in multiple areas to build a conscious community that will positively impact living beings for a sustainable future.

Mission of the University

1. Offers a wide range of Undergraduate and Postgraduate Courses.

To create conducive environment for an interactive and application oriented experiential learning making the Institute a preferred destination for work and study.

2. Research, Innovation, Consultancy & Entrepreneurial Culture

To Foster creativity, research and innovation orientation in students and faculty in basic and applied areas in all of its disciplines, provide cost effective solutions and nurture entrepreneurial capabilities to accelerate growth.

3. Social Relevance with local actions on global thoughts

To act as a catalyst in social change by developing academic, social, political, technological, scientific, industrial and business leadership in the spirit “Think Globally and Act Locally”; by providing ample opportunities to develop team spirit, sportsmanship and love for

Core Values

Integrity

Leadership

Diversity

Community

Vision of the School

To become a centre of excellence for providing quality and value based education in the field of diploma engineering that will produce skilled technocrats to meet industry requirements.

Mission of the School

- To provide technical knowledge and skills by using latest engineering tools.
- To facilitate industry-institute interaction to explore the industrial knowledge of the students.
- To inculcate ethical and professional values among students.
- To impart quality education to the students coming from rural parts and to conduct different curricular & co-curricular activities to enhance the academic.

Core Values

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PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO 1. Possess a solid foundation in mechanical engineering theory and practice, as well as the ability to solve problems and solve them, allowing them to develop, evaluate, and build efficient mechanical systems and procedures.

PEO 2. To create engineers with sound technical knowledge for facing all sorts of challenges in industry or in pursuance of higher studies.

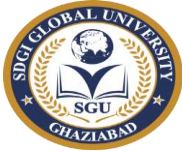
PEO 3. To motivate students, to acquire attitude for lifelong learning along with leadership skills, team spirit and ethical values so that they upgrade themselves with the latest trends in the field of engineering in order to serve the society.

PROGRAMME OUTCOMES (POs)

- PO 1.** Basic and Discipline specific knowledge: Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.
- PO 2.** Problem analysis: Identify and analyse well-defined engineering problems using codified standard methods.
- PO 3.** Design/ development of solutions: Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.
- PO 4.** Modern tool usages: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities with an understanding of the limitations.
- PO 5.** Engineering practices for society, sustainability and environment: Apply appropriate technology in context of society, sustainability, environment and ethical practices.
- PO 6.** Project Management: Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.
- PO 7.** Life-long learning: Ability to analyse individual needs and engage in updating in the context of technological changes.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- PSO 1.** Ability to apply principles of mechanical engineering, including mechanics, thermodynamics, fluid mechanics, heat transfer, materials science, manufacturing processes, and machine design to solve complex engineering problems.
- PSO 2.** Proficient in the use of modern engineering tools and software for modelling, simulation, analysis, and design of mechanical systems. They will be able to utilize CAD/CAM, FEA, and other computational tools to enhance engineering solutions.
- PSO 3.** Capability to design and develop mechanical systems, components, and processes that meet specific requirements, considering public health and safety, cultural, societal, and environmental factors.
- PSO 4.** Able to collaborate effectively with professionals from other engineering disciplines and fields of study. They will possess the skills to work in multidisciplinary teams, bringing mechanical engineering expertise to diverse projects and innovations.



SDGI GLOBAL UNIVERSITY, GHAZIABAD

SCHOOL OF ENGINEERING & TECHNOLOGY

STUDY AND EVALUATION SCHEME FOR DIPLOMA IN MECHANICAL ENGINEERING

W.E.F. Session : 2025-26

(Batch : 2023-2026)

Semester - V

S. No	Status	Paper Code	Subjects	Study Scheme			Hours	Credits	CIE	ESE	Total	Pass Marks
				L	T	P						
1	DC	D061523501	Theory of Machines	2	1	0	3	2	50	50	100	40
2	DC	D061523502	Machine Design	3	0	0	3	3	50	50	100	40
3	DC	D061523503	Production Technology	2	1	0	3	2	50	50	100	40
4	DC	D061523504	Production Management	2	1	0	3	2	50	50	100	40
5	DC	D061523505	Automobile Engineering	2	1	0	3	2	50	50	100	40
6	SE	D06SE24505	Industrial Management and Entrepreneurship Development	3	0	0	3	3	50	50	100	40
7	DC	D061523553	Production Technology Lab	0	0	4	4	2	60	40	100	40
8	DC	D061523554	Production Management Lab	0	0	2	2	1	60	40	100	40
9	DC	D061523555	Automobile Engineering Lab	0	0	2	2	1	60	40	100	40
10		D061523560	Industrial Training/Summer Internship	0	0	0	0	2	60	40	100	40
Total				14	4	8	26	20	540	460	1000	400

Semester-5th



JUSTIFICATION

A diploma holder in this course is required to assist in the design and development of prototype and other components. For this, it is essential that he is made conversant with the principles related to design of components and machine and application of these principles for designing. The aim of the subject is to develop knowledge and skills about various aspects related to design of machine components.

DETAILED CONTENTS

UNIT 1: Simple Mechanisms	06 Hours
1.1 Introduction to link, kinematic pair, lower and higher pair, Kinematic chain, mechanism, Inversions.	
1.2 Different types of mechanisms (with examples)	
UNIT 2: Flywheel	08 Hours
2.1 Principle and applications of flywheel, Turning - moment diagram of flywheel for different engines.	
2.2 Fluctuation of speed and fluctuation of energy - Concept only, Coefficient of fluctuation of speed and coefficient of fluctuation of energy.	
UNIT 3: Dynamics of Machine & Balancing	08 Hours
3.1 Static and dynamic force analysis graphical and analytical approaches	
3.2 Gyroscopic action in machines.	
3.3 Concept of balancing, Introduction to balancing of rotating masses.	
UNIT 4: Power Transmission	08 Hours
4.1 Introduction to Belt and Rope drives, Types of belt drives and types of pulleys	
4.2 Concept of velocity ratio, slip and creep; crowning of pulleys (simple numerical), Flat and V belt drive: Ratio of driving tensions, power transmitted, centrifugal tension, and condition for maximum horse power (simple numerical).	
4.3 Different types of chains and their terminology, Gear terminology, types of gears and their applications; simple and compound gear trains; power transmitted by simple spur gear.	
UNIT 5: Cam and follower & Vibrations	08 Hours
5.1 Introduction, types of Cam and follower, construction of Cam profile for constant velocity motion, constant acceleration motion and simple harmonic motion.	
5.3 Types-longitudinal, transverse and torsional vibrations (simple numerical).	
5.4 Dampening of vibrations, Causes of vibrations in machines, their harmful effects and remedies.	

RECOMMENDED BOOKS

1. Theory of Machine by B.S Ubhi; S.K. Kataria and Sons, New Delhi.
2. Theory of machine by J.K Kapoor, Bharat Bharti Prakashan, Meerut
3. Theory of Machine by R.S.Khurmi, S Chand



JUSTIFICATION

A diploma holder in this course is required to assist in the Design and Development of Prototype and other components. For this, it is essential that he is made conversant with the principles related to design of components and machine and application of these principles for designing. The aim of the subject is to develop knowledge and skills about various aspects related to design of machine components.

DETAILED CONTENTS

UNIT 1: Introduction	08 Hours
1.1 Design – Definition, Type of design, necessity of design, Comparison of designed and undersigned work, Design procedure, Characteristics of a good designer	
1.2 Design terminology: , factor of safety, factors affecting factor of safety, stress, Concentration, methods to reduce stress concentration, fatigue, endurance limit. General design consideration, Codes and Standards (BIS standards), Selection of materials, criteria of material selection, Ergonomics and Aesthetic Consideration in design, Ergonomics of design-man-machine relationship. Design of equipment for control, environment and safety. Aesthetic consideration regarding shape, size, color and surface finish.	
UNIT 2: Design Failure & Design of Joints	08 Hours
2.1 Theories of failure, Classification of loads, Design under tensile, compressive and tensional loads.	
2.2 Types of joints - Temporary and permanent joints, utility of various joints	
2.3 Temporary Joint: Knuckle Joints - Different parts of the joint, material used for the joint, Type of knuckle Joint, design of the knuckle joint. (Figures and problems).Cotter Joint - Different parts of the spigot and socket joints, Design of spigot and socket joint.	
2.4 Permanent Joint: Welded Joint - Welding symbols. Type of welded joint, strength of parallel and transverse fillet welds. Strength of combined parallel and transverse weld. Riveted Joints. : Rivet materials, Rivet heads, leak proofing of riveted joint- caulking and fullering. Different modes of rivet joint failure. Design of riveted joint - Lap and butt, single and multi-riveted joint.	
UNIT 3: Design of Shaft & Design of Key	08 Hours
3.1 Type of shaft, shaft materials, Type of loading on shaft, standard sizes of shaft available, Shaft subjected to torsion only, determination of shaft diameter (hollow and solid shaft) on the basis of :Strength criterion, Rigidity criterion	
3.2 Determination of shaft diameter (hollow and solid shaft) subjected to bending.	
3.3 Determination of shaft diameter (hollow and solid shaft) subjected to combined torsion and bending.	
3.4 Types of key, materials of key, functions of key, Failure of key (by Shearing and Crushing).	
3.5 Design of key (Determination of key dimension)	

3.6 Effect of keyway on shaft strength. (Figures and problems).

UNIT 4: Design of Flange Coupling

8 Hours

4.1 Necessity of a coupling, advantages of a coupling, types of couplings,

4.2 Design of muff coupling, design of flange coupling. (Both protected type and unprotected type).

UNIT 5: Design of Screwed Joints

06 Hours

5.1 Introduction, Advantages and Disadvantages of screw joints, location of screw joints.

5.2 Important terms used in screw threads, designation of screw threads

5.3 Initial stresses due to screw up forces, stresses due to combined forces

5.4 Design of power screws (Press, screw jack, screw clamp)

RECOMMENDED BOOKS

1. Machine Design by R.S. Khurmi and JK Gupta, Eurasia Publishing House (Pvt.) Limited, New Delhi.
2. Machine Design by V.B.Bhandari, Tata McGraw Hill, New Delhi.
3. Engineering Design by George Dieter; Tata McGraw Hill Publishers, New Delhi.
4. Mechanical Engineering Design by Joseph Edward Shigley; McGraw Hill, Delhi.
5. Machine Design (Hindi & English) by Anshul Agarawal, Asian Publication, Mujaffarnagar
6. Design Data Handbook by D.P. Mandali, SK Kataria and Sons, Delhi.
7. Machine Design (Hindi & English) by Anurag Kumar, JPNN, Meerut



SCHOOL OF ENGINEERING & TECHNOLOGY

PRODUCTION TECHNOLOGY

(D061523503)

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JUSTIFICATION

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, modern machining methods, tools, jigs and fixtures is required to be imparted.

DETAILED CONTENTS

UNIT 1: Lathe	08 Hours
1.1 Principle of turning, Description and function of various parts of a lathe, Classification and specification of various types of lathe, Drives and transmission.	
1.2 Work holding devices, Lathe tools: Parameters/Nomenclature and applications, Lathe operations :- Plain and step turning, facing, parting off, taper turning, eccentric turning, drilling, reaming, boring, threading and knurling, form turning, spinning.	
1.3 Cutting parameters – Speed, feed and depth of cut for various materials and for various operations, machining time. Speed ratio, preferred numbers of speed selection. Lathe accessories:-Centers, dogs, different types of chucks, collets, face plate, angle plate, mandrel, steady rest, follower rest, taper turning attachment, tool post grinder, milling attachment, Quick change device for tools.	
1.4 Brief description of capstan and turret lathe, comparison of capstan/Turret lathe, work holding and tool guiding devices in capstan and turret lathe.	
UNIT 2: Milling, Drilling	08 Hours
2.1 Specification and working principle of milling machine.	
2.2 Classification, brief description and applications of milling machines.	
2.3 Details of column and knee type milling machine, Milling machine accessories and attachment – Arbors, adaptors, collets, vices, circular table, indexing head and tail stock, vertical milling attachment shover chuck and rotary table.	
2.4 Milling methods - up milling and down milling.	
2.5 Identification of different milling cutters and work mandrels.	
2.6 Heat source and heat sinks, statement of second laws of thermodynamics: Kelvin Planck's statement, Clausius statement, Perpetual motion Machine of first kind, second kind, Carnot engine.	
2.7 Principle of drilling, Classification of drilling machines and their description.	
2.8 Various operations performed on drilling machine – drilling, spot facing, reaming, boring, counter boring, counter sinking, hole milling, tapping.	
2.9 Types of drills and their features, nomenclature of a drill, Drill holding devices. Types of reamers.	
2.10 Speeds and feeds during drilling, impact of these parameters on drilling, machining time.	
UNIT 3: Boring, Shaping and Planning	08 Hours

- 3.1 Principle of boring, Classification of boring machines and their brief description.
- 3.2 Specification of boring machines, Boring tools, boring bars and boring heads, Description of jig boring machine.
- 3.3 Working principle of shaper and planer, Type of shapers
- 3.4 Type of planers, Quick return mechanism applied to shaper and planer machine.
- 3.5 Specification of shaper and planer, Speeds and feeds in above processes

UNIT 4: Broaching

6 Hours

- 4.1 Types of broaching machines – Single ram and duplex ram horizontal type, vertical type pull up, pull down, push down.

UNIT 5: Grinding

08 Hours

- 5.1 Purpose of grinding.
- 5.2 Selection of grinding wheel.
- 5.3 Various elements of grinding wheel – Abrasive, Grade, structure, Bond
- 5.4 Common wheel shapes and types of wheel – built up wheels, mounted wheels and diamond wheels. Specification of grinding wheels as per BIS.
- 5.5 Truing, dressing, balancing and mounting of wheel, Grinding methods – Surface grinding, cylindrical grinding and centre less grinding.
- 5.6 Grinding machine – Cylindrical grinder, surface grinder, internal grinder, centre less grinder, tool and cutter grinder.

RECOMMENDED BOOKS

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1. Manufacturing Technology by Rao; Tata McGraw Hill Publishers, New Delhi.
 2. Production Engineering and Science by Pandey and Singh; 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 Publisher, New Delhi
 5. Production Technology (Hindi & English) by Dr. Vijay Mittal, Asian Publication, Mujaffarnagar
 6. Production Technology (Hindi) by Shivdatt Upadhyaya, Bharat Bharti Prakashan, Meerut



JUSTIFICATION

Diploma holder is responsible for controlling production and quality of the product on the shop floor as well as for production planning and control. He is also required to supervise erection, installation and maintenance of equipment including material handling and undertake work-study for better utilization of resources. For this purpose, knowledge and skills about these topics need to be imparted to them. This subject aims at development of competencies to prepare material, equipment schedule and production control schedules and maintain required quality levels. In addition, it will also help in developing skills in erection, installation and testing of equipment.

DETAILED CONTENTS

UNIT 1: Production Planning and Control (PPC)	08 Hours
1.1 Introduction, Objectives and factors affecting PPC	
1.2 Functions(Elements) of PPC - Planning, Routing, Loading, scheduling, dispatching, progressing and inspection	
1.3 Types of production system - Flow or continuous production, Intermittent Production	
1.4 Production Control - Objectives and fields of production control, Production control system	
1.5 Break even analysis and Gantt chart	
UNIT 2: Inspection and Quality Control	08 Hours
2.1 Inspection – Introduction, Need and Importance, Types of Inspection, Role of operator and inspector in inspection	
2.2 Quality Control: Introduction, Need and Importance. Factors affecting product quality.	
2.3 Quality Assurance	
UNIT 3: Cost Estimation	08 Hours
3.1 Definition and functions of cost estimation, estimation procedure, elements of cost, ladder of costs (simple numerical).	
3.2 Overhead expenses and its distribution, Depreciation- Concept and Definition, Methods of calculating depreciation- Straight line method, Diminishing Balance Method, Sinking fund method (Numerical problems).	
3.3 Cost control- definition and objectives, Capital cost control (planning and scheduling), operating cost control.	
3.4 Cost estimation for machining processes like turning, drilling, and milling. Cost estimation of forming processes like forging, pattern making, and casting.	
UNIT 4: Repair and Maintenance	8 Hours
4.1 Objectives and importance of Maintenance.	
4.2 Different types of maintenance- Corrective or Breakdown maintenance, Scheduled Maintenance, Preventive Maintenance, Predictive Maintenance.	
4.3 Nature of maintenance problems.	
4.4 Range of maintenance problems.	

UNIT 5: Labour Legislation and Pollution Control Acts**6 Hours**

- 5.1 Factory Act 1948.
- 5.2 Workmen's compensation Act 1923.
- 5.3 Apprentices Act 1961.
- 5.4 Water Pollution Control Act 1974 and 1981.
- 5.5 Air Pollution Control Act 1981.
- 5.6 Environmental protection Act 1986.
- 5.7 PF Act, Employee's State Insurance (ESI) Act
- 5.8 Pollution control provision in Motor Vehicle Act.

RECOMMENDED BOOKS

1. Production Management by C.L. Mahajan; Satya Parkashan Company Limited, New Delhi.
2. Mechanical Costing, Estimation and Project Planning by CK Singh; Standard Publishers, New Delhi.
3. Industrial Engineering and Management by T.R. Banga and SC Sharma; Khanna Publishers, Delhi.
4. Industrial Engineering and Management by O.P Khanna, Dhanpat Rai
5. Industrial Engg. & Safety (Hindi & English) by Madhvendra Raj, Sarthak Publication, Meerut



JUSTIFICATION

These days, automobile has become a necessity instead of luxury. The diploma holders in this course are required to supervise production and repair and maintenance of vehicles. For this purpose, knowledge and skills are required to be imparted to them regarding automobile industry as a whole. This subject aims at developing required knowledge and skills in this area.

DETAILED CONTENTS

UNIT 1: Introduction	06 Hours
1.1 Automobile and its development, Various types of automobiles manufactured in India.	
1.2 Classification of automobiles	
1.3 Layout of chassis.	
1.4 Types of drives-front wheel, rear wheel, four wheel.	
1.5 Concept of double overhead cam, single overhead cam, Twin cam 16 Valve technology in 4 cylinder engine.	
UNIT2: Transmission System	08 Hours
2.1 Clutch - Function, Constructional details of single plate and multi plate friction clutches, Centrifugal and semi centrifugal clutch, Cone clutch, Hydraulic clutch	
2.2 Gear Box - Function, Working of sliding mesh, constant mesh and synchromesh gear box, Torque converter and overdrive, Introduction to Automated Manual Transmission, Automatic transmission and Continuously Variable Transmission	
2.3 Propeller shaft and rear axle - Function, Universal joint, Differential, Different types of rear axles and rear axle drives.	
2.4 Wheels and Tyres - Types of wheels, Types and specifications of tyres used in Indian vehicles, Toe in, toe out, camber, caster, kingpin inclination, Wheel balancing and alignment, Factors affecting tyre life.	
UNIT3: Steering System & Braking system	10 Hours
3.1 Function and principle, Ackerman and Davis steering gears, Types of steering gears -worm and wheel, rack and pinion, Power steering-Hydraulic and Electrical.	
3.2 Constructional details and working of mechanical, hydraulic, air and vacuum brake, Relative merits and demerits. Details of master cylinder, wheel cylinder, Concept of brake drum, brake lining/pad and Brake adjustment, Introduction to Anti-lock Brake System and its working.	
UNIT4: Suspension System & Battery	08 Hours
4.1 Function and types of Coil spring, leaf spring, Air suspension, Shock absorber – Function, construction and working of Telescopic type.	
4.2 Constructional details of lead acid cell battery, Specific gravity of electrolyte - effect of temperature on specific gravity, Specification of battery-capacity, rating , number of plates, selection of battery for particular use, Battery charging, chemical reactions during charge and discharge, Maintenance of batteries,	

Checking of batteries for voltage and specific gravity. Batteries for electric and hybrid vehicles.

UNIT5: Exhaust Emissions

6 Hours

- 5.1 Types and use of catalytic converters, selective catalytic reduction methods for emission control, emission norm standards i.e. Bharat norms.

RECOMMENDED BOOKS

1. Automotive Mechanics, by W.Crouse and Anglin; Tata McGraw Hill, Delhi.
2. Automobile Engineering by G. S. Aulakh; Eagle Prakashan, Jalandhar
3. Automobile Engineering (Hindi & English) by P.S.Kushwaha; Bharat Bharti Publication, Meerut
4. Automobile Engineering (Hindi & English) by Er. Arpit Gupta, JPNP, Meerut
5. E-books/e-tools/relevant software to be used as recommended by AICTE/UBTE/NITTTR, Chandigarh.



SCHOOL OF ENGINEERING & TECHNOLOGY

INDUSTRIAL MANAGEMENT AND ENTREPRENEURSHIP DEVELOPMENT

L T P
3 0 0

(D06SE24505)

JUSTIFICATION

In the present day scenario, it has become imperative to impart entrepreneurship and management concepts to students so that a significant percentage of them can be directed towards setting up and managing their own small enterprises. It may be further added that an entrepreneurial mindset with managerial skills helps the student in the job market. This subject focuses on imparting the necessary competencies and skills of enterprise set up and its management.

DETAILED CONTENTS

UNIT 1: Introduction	06 Hours
1.1 Concept /Meaning and its need	
1.2 Qualities and functions of entrepreneur and barriers in entrepreneurship	
1.3 Sole proprietorship and partnership forms and other forms of business organizations through the concept of a set of independent vectors, Consistency of equations.	
1.4 Schemes of assistance by entrepreneurial support agencies at National, State, District –level, organization: NSIC, NRDC, DC, MSME, SIDBI, NABARD, NIESBUD, HARDICON Ltd., Commercial Banks, SFC's TCO, KVIB, DIC, Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks	
UNIT 2: Market Survey and Opportunity Identification/Ideation	08 Hours
2.1 Scanning of the business environment	
2.2 Salient features of National and Haryana State industrial policies and resultant business opportunities	
2.3 Types and conduct of market survey	
2.4 Assessment of demand and supply in potential areas of growth	
2.5 Identifying business opportunity	
2.6 Considerations in product selection	
2.7 Converting an idea into a business opportunity	
UNIT 3: Project report Preparation and basic of Accounting and Finance	08 Hours
3.1 Preliminary project report	
3.2 Detailed project report including technical, economic and market feasibility	
3.3 Common errors in project report preparations	
3.4 Exercises on preparation of project report, Sample project report	
3.5 Basic of Accounting: Meaning and definition of accounting, Double entry system of book keeping, Trading account, PLA account and balance sheet of a company	
3.6 Objectives of Financial Management: Profit Maximization v/s Wealth Maximization	
UNIT 4: Introduction to Management, Leadership and Motivation	08 Hours
4.1 Definitions and importance of management	
4.2 Functions of management: Importance and process of planning, organizing, staffing, directing and controlling	
4.3 Principles of management (Henri Fayol, F.W. Taylor).	
4.4 Concept and structure of an organization	

- 4.5 Types of industrial organizations and their advantages
- 4.6 Line organization, staff organization
- 4.7 Line and staff organization, Functional Organization
- 4.8 Leadership: Definition and Need, Qualities and functions of a leader, Manager Vs. leader, Types of leadership, Case studies of great leaders
- 4.9 Motivation: Definition and characteristics, Importance of self-motivation, Factors affecting motivation, Theories of motivation (Maslow, Herzberg, Douglas, McGregor)

UNIT 5: Management Scope in Different Areas, Work culture

08 Hours

- 5.1 Human Resource Management: Introduction and objective, Introduction to Man power planning, recruitment and selection, Introduction to performance appraisal methods.
- 5.2 Material and Store Management: Introduction functions, and objectives, ABC Analysis and EOQ
- 5.3 Marketing and sales: Introduction, importance, and its functions, Physical distribution, Introduction to promotion mix, Sales promotion.
- 5.4 Financial Management: Introductions, importance and its functions, knowledge of income tax, sales tax, excise duty, custom duty, VAT, GST
- 5.5 Introduction and importance of Healthy Work Culture in organization: Components of Culture, Importance of attitude, values and behavior, Behavioral Science – Individual and group behavior.
- 5.6 Professional ethics – Concept and need of Professional Ethics and human values.

RECOMMENDED BOOKS

1. A Handbook of Entrepreneurship, Edited by BS Rathore and Dr JS Saini; Aapga Publications, Panchkula (Haryana)
2. Entrepreneurship Development and Management by J.S.Narang; Dhanpat Rai & Sons, Delhi.
3. Entrepreneurship Development by CB Gupta and P Srinivasan, Sultan Chand and Sons, New Delhi
4. Industrial Management & entrepreneurship development (Hindi & English) by Shivdatt Upadhayay, BBP, Meerut
5. Industrial Management by M. Maharajan, Dhanpat Rai, Co, New Delhi
6. E-books/e-tools/relevant software to be used as recommended by AICTE/UBTE/NITTTR, Chandigarh.



SCHOOL OF ENGINEERING & TECHNOLOGY

PRODUCTION TECHNOLOGY LAB

(D061523553)

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JUSTIFICATION

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, modern machining methods, tools, jigs and fixtures is required to be imparted.

LIST OF PRACTICAL'S

1 TURNING SHOP

- Job 1 Grinding of single point turning tool.
- Job 2 Exercise of simple turning and step turning.
- Job 3 A composite job involving, turning, taper turning, external thread cutting and knurling.

2 ADVANCE FITTING SHOP

- Job 1 Exercise on drilling, reaming, counter boring, counter sinking and taping.
- Job 2 Dove tail fitting in mild steel
- Job 3 Radius fitting in mild steel
- Job 4 Pipe threading with die

3 MACHINE SHOP

- Job 1 Prepare a V-Block up to 0.5 mm accuracy on shaper machine
- Job 2 Exercise on key way cutting and spline cutting on shaper machine.
- Job 3 Produce a rectangular block using a milling machine with a side and face cutter
- Job 4 Prepare a slot on one face using milling machine

4 ADVANCE TURNING SHOP

- Job 1 Exercise of boring with the help of boring bar
- Job 2 Exercises on
- Job 3 Exercises on internal threading on lathe machine

5 FORGING SHOP/FITTING SHOP/SHEET METAL SHOP

- Job 1 Preparation of single ended spanner by hand, machine forging
- Job 2 Demonstration of grinding process on lathe machine and grinding a job on a lathe machine
- Job 3 Preparation of utility item out of G.I. sheet
- Job 4 Preparation of drilling jig

1.



SCHOOL OF ENGINEERING & TECHNOLOGY

PRODUCTION MANAGEMENT LAB

(D061523554)

L	T	P
0	0	2

JUSTIFICATION

Diploma holder is responsible for controlling production and quality of the product on the shop floor as well as for production planning and control. He is also required to supervise erection, installation and maintenance of equipment including material handling and undertake work-study for better utilization of resources. For this purpose, knowledge and skills about these topics need to be imparted to them. This subject aims at development of competencies to prepare material, equipment schedule and production control schedules and maintain required quality levels. In addition, it will also help in developing skills in erection, installation and testing of equipment.

LIST OF PRACTICAL'S

- 1 Prepare a flow diagram
- 2 Prepare a Gantt chart
- 3 Draw X, R, p and c charts
- 4 Estimate the cost of turning
- 5 Estimate the cost of drilling
- 6 Prepare maintenance schedule



JUSTIFICATION

These days, automobile has become a necessity instead of luxury. The diploma holders in this course are required to supervise production and repair and maintenance of vehicles. For this purpose, knowledge and skills are required to be imparted to them regarding automobile industry as a whole. This subject aims at developing required knowledge and skills in this area.

LIST OF PRACTICAL'S

- 1 Fault and their remedies in Battery Ignition system.
- 2 Adjustment of Head Light Beam, wiper and Indicators.
Dismantling and inspection of (i) AC Pump (ii) SU Pump
- 3 Dismantle (i) rear axle (ii) differential and find out the gear ratio of crown wheel & driven sun gear and planet pinion.
- 4 Fault finding practices on an automobile - four wheelers (petrol/ diesel vehicles).
- 5 Servicing/Tuning of a 2 wheeler/4 wheeler.
- 6 Servicing of hydraulic brakes :
 - a) adjustment of brakes
 - b) bleeding of brakes
- 7 Tuning of an automobile engine.
- 8 Testing and Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte.
- 9 Changing of wheels and inflation of tyres, balancing of wheels.
- 10 Measuring spark gap, valve clearance and ring clearance; carrying out cleaning Operations for adjustment.



SCHOOL OF ENGINEERING & TECHNOLOGY

SUMMER INTERNSHIP/INDUSTRIAL TRAINING

(D061523560)

L	T	P
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It is needless to emphasize further the importance of Industrial Training of students during their 3 years of studies at Polytechnics. It is industrial training, which provides an opportunity to students to experience the

environment and culture of industrial production units and commercial activities undertaken in field organizations. It prepares student for their future role as diploma engineers in the world of work and enables them to integrate theory with practice. Polytechnics have been arranging industrial training of students of various durations to meet the above objectives.

This document includes guided and supervised industrial training of 4 weeks duration to be organized during the semester break starting after second year i.e. after 4th semester examinations. The concerned HODs along with other teachers will guide and help students in arranging appropriate training places relevant to their specific branch. It is suggested that a training schedule may be drawn for each student before starting of the training in consultation with the training providers. Students should also be briefed in

advance about the organizational setup, product range, manufacturing process, important machines and materials used in the training organization.

Equally important with the guidance is supervision of students training in the industry/organization by the teachers. Students should be encouraged to write daily report in their diary to enable them to write final report and its presentation later on.

An external assessment of 50 marks has been provided in the study and evaluation scheme of 5th Semester. Evaluation of professional industrial training report through viva-voce/presentation aims at assessing students understanding of materials, industrial process, practices in industry/field organization and their ability to engage in activities related to problem solving in industrial setup as well as understanding of application of knowledge and skills learnt in real life situations.

Teachers and students are requested to see the footnote below the study and evaluation scheme of 4th semester for further details. The teacher along with field supervisors will conduct performance assessment of students.

The components of evaluation will include the following:

- Punctuality and regularity 15%
- Initiative in learning new things 15%
- Presentation and Viva 15%
- Industrial training report 55%