Programme : Diploma in CE / EE / ME / MT
Programme Code : 01 / 02 / 04 / 05/15/16/18/19
Name of Course : Engineering Mechanics
Course Code : AM261

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**04**	**64**
Practical	**02**	**32**

Evaluation Scheme:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Two class tests, each of 60 minutes	3Hrs.	--	--	--
Marks	**20**	**80**	--	**25**	**25**

Course Rationale:

To find solutions to various practical problems, it is essential for the student to study and get acquainted with the various aspects in Statics and Dynamics. The fundamental concepts to be studied in this course are required for study of Strength of Materials, Mechanics of Structures and other courses of Mechanical & Civil Engineering to be studied at higher level.

Course Objectives:

After studying this course, the student will be able to

- Understand various concepts & principles in Engineering Mechanics.
- Apply those principles for evaluating various problems coming across various fields of engineering

Course Content:

Chapter No.	Name of Topic/Sub topic		Hrs	Weigh tage
1.	**Introduction**			
	1.1	Fundamental Concept such as Fundamental units, Derived unit, system of Unit, Scalars, Vectors.	**02**	**02**
	1.2	Mechanics, Statics, Dynamics, Kinematics, Kinetics.		
	1.3	Gravity, Mass, Weight, Inertia, Newton's Law of Gravitation and Newton's Law of motion.		
2.	**Resolution and composition of Forces**			
	2.1	Concept of force, unit force, graphical representation, Principle of transmissibility.	**08**	**12**
	2.2	System of forces, coplanar, non coplanar, concurrent, non-concurrent, parallel.		
	2.3	Resolution of a force, resolved parts, orthogonal and non-orthogonal components of a force.		
	2.4	Concept of composition & resultant of forces.		
	2.5	Law of Parallelogram of Forces, Triangle law of Forces, Polygon law of forces.		
	2.6	Moment of a force, Varignon's Theorem, couple & characteristics of couple.		
	2.7	Composition of Coplanar forces- Concurrent, parallel (like & unlike) non concurrent forces by analytical methods		
3.	**Equilibrium**			
	3.1	Concept of equilibrium, equilibrant, Relation between resultant & equilibrant. Analytical conditions.	**08**	**12**
	3.2	Equilibrium of coplanar concurrent forces, Lami's theorem and its application.		
	3.3	Equilibrium of coplanar parallel and non-concurrent forces.		
	3.4	Beam reactions - simply supported beams subjected to concentrated and distributed loads, beam supported on roller and hinge supports, overhanging beams.		

4.	**Graphic statics**			
	4.1	Concept of equilibrium, equilibrant, Relation between resultant & equilibrant. Analytical conditions.	**06**	**08**
	4.2	Equilibrium of coplanar concurrent forces, Lami's theorem and its application.		
	4.3	Equilibrium of coplanar parallel and non-concurrent forces.		
	4.4	Beam reactions - simply supported beams subjected to concentrated and distributed loads, beam supported on roller and hinge supports, overhanging beams.		
5.	**Centroid and Centre of gravity**			
	5.1	Concept of Centre of Gravity & Centroid.	**06**	**08**
	5.2	Centroid of regular plane areas & compound areas consisting of regular plane areas. Centroid of hollow solids such as hollow cylinder, hollow cone, hollow sphere.		
	5.3	Centre of gravity of simple solids-cylinder, prism, cone, sphere etc. and C.G. of compound solid objects made up of simple solids.		
	5.4	Beam reactions - simply supported beams subjected to concentrated and distributed loads, beam supported on roller and hinge supports, overhanging beams.		
6.	**Friction**			
	6.1	Introduction to friction.	**08**	**10**
	6.2	Types of friction, Laws of static friction, coefficient of friction, angle of friction, and angle of repose.		
	6.3	Equilibrium of body on horizontal & inclined planes.		
	6.4	Ladder friction.		
7.	**Kinetics**			
	7.1	Concept of force, mass, acceleration, momentum, impulse & impact.	**08**	**10**
	7.2	Types of friction, Laws of static friction, coefficient of friction, angle of friction, and angle of repose.		

	7.3	Principle of Conservation of momentum, principle-its application, recoil velocity of gun.		
8.	**Work, Power, Energy**			
	8.1	Definitions and units of work, graphical representation of work, work done by torque, work done by constant and variable force.	**08**	**08**
	8.2	Energy, forms, law of conservation of energy, work-energy principle and its applications.		
	8.3	Power-Definition, units.		
9.	**Simple Machines**			
	9.1	Definition of simple machine, mechanical advantage, velocity ratio, efficiency. Relation between them, friction in machines.	**10**	**10**
	9.2	Reversibility, law of machine, max MA & max efficiency.		
	9.3	Study of machine – levers, pulleys, wheel and axle, screws, worm & worm wheel, winches, gears, etc.		
		Total	**64**	**80**

List of Practicals/Experiments/Assignments:

Sr. No.	**Name of Experiment/Assignment**	**Hrs**
1.	Law of Polygon of Forces.	02
2.	Law of Moments.	02
3.	Lami's Theorem.	02
4.	Beam Reactions.	02
5.	Graphic statics-Two Problems each on composition of concurrent and parallel forces.	06
6.	Graphic statics-Two Problems on beam reactions.	04
7.	Centroid of Regular and irregular Laminas.	02
8.	Determination of coefficient of friction for different surfaces.	02
9.	To study various lifting machines – Differential axle and wheel, Worm and worm wheel, Simple screw jack, Single purchase crab, Double purchase crab.	10
	Total	**32**

Instructional Strategy:

Sr. No.	Topic	Instructional Strategy
1.	Introduction	Lecture method, Demonstration
2.	Resolution and composition of Forces	Lecture method, Demonstration
3.	Equilibrium	Lecture method, Transparencies
4.	Graphic Statics	Lecture method, Transparencies
5.	Centroid & Center of Gravity	Lecture, Demonstration & Discussion
6.	Friction	Lecture method, Demonstration
7.	Kinetics	Lecture method, Demonstration
8.	Work, power, Energy	Lecture method, Demonstration
9.	Simple lifting machines	Lecture method, Demonstration

Text Books:

Sr. No	Author	Title	Publication
1.	Junnarkar, Adavi	Applied Mechanics	Charotar Publishers
2.	Dadhe, Jamdar, Walawalkar	Applied Mechanics	Sarita Prakashan
3.	Khurmi	Applied Mechanics	S. Chand

Reference Books:

Sr. No	Author	Title	Publication
1.	Beer & Johnson	Vector Mechanics For Engineers (Statics & Dynamics)	Mc - Graw Hill Co., USA
2.	McLean & Nelson (Schaum's Series)	Engineering Mechanics	Mc - Graw Hill Co., USA
3.	Timoshenko & Young	Engineering Mechanics	Mc - Graw Hill Co., USA

Learning Resources: Books, Models

Specification Table:

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Introduction	02	--	--	02
2.	Resolution and composition of Forces	02	04	06	12
3.	Equilibrium	02	02	08	12
4.	Graphic Statics	04	04	--	08
5.	Centroid & Center of Gravity	02	02	04	08
6.	Friction	02	02	06	10
7.	Kinetics	02	02	06	10
8.	Work, power, Energy	02	02	04	08
9.	Simple lifting machines	02	04	04	10
	Total	**20**	**22**	**38**	**80**

(Prof. R.M.Koranne)
Prepared By

(Prof. S. B. Kulkarni)
Secretary, PBOS

(Prof.C.C. Dandvatimath)
Chairman, PBOS

Programme : Diploma in CE/EE/ET/ MT/CM/IT
Programme Code : 01/02/03/05/06/07/15/16/17 /19
Name of Course : Basics of Computer Systems
Course Code : CM261

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**03**	**48**
Practical	**02**	**32**

Evaluation Scheme:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	---	---	2 hrs	---	2 hrs
Marks	---	---	50	---	25

Course Rationale:

In this world of high speed computing, it is essential for diploma in computer engineering students to know about device of computers, its operation and graphical base applications and latest technologies in the market. This course is designed for basic perspective for first year diploma students.

Course Objectives:

- Use computer system effectively.
- Describe and use different application software's.
- Use the basic functions of an operating system.
- Use five essential utility programs.
- Compare major OS like Linux and MS-Windows
- Understand working of input output devices.
- Understand working of secondary storage devices.
- Set the parameter required for effective use of hardware combined with and application software's
- Understand connectivity, internet multimedia and web.

Course Content:

Chapter No.	Name of Topic/Sub topic		Hrs	Weigh tage
1	**Input and Output**			
	1.1	**What Is Input?**	**04**	---
	1.2	**Keyboard Entry**		
		Keyboards		
	1.3	**Pointing Devices**		
		Mouse, Joystick, Touch Screen, Light Pen, Stylus		
	1.4	**Scanning Devices**		
		Optical Scanners, Bar Code Readers, Character and Mark Recognition Devices		
	1.5	**Image Capturing Devices**		
		Digital Camera, Digital Video Camera		
	1.6	**Audio-Input Devices**		
		Voice		
	1.7	**Webcams and Instant Messaging**		
	1.8	**What Is Output?**		
	1.9	**Monitors**		
		Cathode-Ray Tube, Panel Monitor, Monitors		
	1.10	**Printers**		
		Features, Ink-Jet Printer, Laser Printer, Thermal Printer, Other Printers		
	1.11	**Audio-Output Devices**		
	1.12	**Combination Input and Output Devices**		
		Fax Machines, Multifunction Devices, Internet Telephone, Terminals		
	SECONDARY STORAGE			
	1.13	**Storage**		
	1.14	**Floppy Disks**		
		Traditional Floppy Disk, High Capacity Floppy Disks		
	1.15	**Hard Disks**		
		Internal Hard Disk, Hard-Disk Cartridges Hard-Disk Packs, Performance Enhancements		
	1.16	**Optical Disks**		
		Compact Disc, Digital Versatile Disc		
	1.17	**Other Types of Secondary Storage**		

		Solid-State Storage		
	1.18	**Making IT Work for You:**		
	1.19	**Music from the Internet**		
		Internet Hard Drives, Magnetic Tape		
	1.20	**Mass Storage Devices**		
	1.21	**A Look to the Future: Blu-Ray Technology and**		
	1.22	**Plastic Memory Expected to Replace DVD**		
2	**The System Unit**			
	2.1	**Electronic Data and Instructions**	**02**	**---**
		Binary Coding Schemes		
	2.2	**System Board**		
	2.3	**Microprocessor**		
		Microprocessor Chips ,Specialty Processors		
	2.4	**Memory**		
		RAM, ROM, CMOS		
	2.5	**System Clock**		
	2.6	**Expansion Slots and Cards**		
	2.7	**Making IT Work for You:**		
	2.8	**TV Tuner Cards and**		
	2.9	**Video Clips**		
	2.10	**Bus Lines**		
		Expansion Buses		
	2.11	**Ports**		
		Standard Ports, Cables		
	2.12	**Power Supply**		
3.	**System Software**			
	3.1	**System Software**	**04**	**---**
	3.2	**Operating Systems**		
		Functions, Features, Categories, Windows Mac OS, UNIX and Linux		
	3.3	**Utilities**		
		Windows Utilities, Utility Suites		
	3.4	**Device Drivers**		
	3.5	**Making IT Work for You: Virus Protection and Internet Security**		
	3.6	**A Look to the Future: IBM Builds an Aware**		

4.	**Basic Application Software**			
	4.1	**Application Software**		
		Common Features, Web-based Applications		
	4..2	**Making IT Work for You: Speech**		
	4.3	**Recognition**		
	4.4	**Word Processors**		
		Features, Case		
	4.5	**Spreadsheets**		
		Features, Case		
	4.6	**Database Management Systems**	**20**	---
		Features, Case		
	4.7	**Presentation Graphics**		
		Features, Case		
	4.8	**Integrated Packages**		
		Case		
	4.9	**Software Suites**		
	4.10	**Sharing Data between Applications**		
		Copy and Paste, Object Linking and Embedding		
	4.11	**A Look to the Future: Web-based Application**		
	4.12	**Software Updates Ease Maintenance**		
5.	**Information Technology**			
	5.1	**Internet, and You (Only Introduction)**		
	5.2	**Information Systems**		
	5.3	**People**		
	5.4	**Making IT Work for You:**		
	5.5	**Information Technology Topics**		
	5.6	**Software**		
		System Software, Application Software	**04**	---
	5.7	**Hardware**		
		Types of Computers, Microcomputer Hardware		
	5.8	**Data**		
	5.9	**Connectivity, the Wireless Revolution, and the Internet**		
	5.9	**A Look to the Future: Using and Understanding**		

	5.10	**Information Technology Means Being Computer Competent**		
6.	**The Internet, the Web, and Electronic Commerce**			
	6.1	**The Internet and the Web Access**	**04**	---
		Providers, Browsers		
	6.2	**Communication**		
		E-Mail, Instant Messaging, Discussion Groups		
	6.3	**Making IT Work for You:**		
	6.4	**Blocking Spam**		
	6.5	**Search Tools**		
		Search Engines, Meta search Engines, Specialized Search Engines		
	6.6	**Electronic Commerce**		
		Web Storefronts, Web Auctions, Security		
	6.7	**Web Utilities**		
		Telnet, FTP, Plug-ins, Filters		
	6.8	**A Look to the Future:Internet2 Is a High-Performance Network**		
7.	**Specialized Application Software (only Introduction)**			
	7.1	**Specialized Applications**	**02**	---
	7.2	**Graphics**		
		Desktop Publishing, Image Editors, Illustration Programs, Image Galleries, Graphics Suites		
	7.3	**Audio and Video Multimedia**		
		Links and Buttons, Developing Multimedia Presentations, Making IT Work for You: Digital Video Editing, Multimedia Authoring Programs		
	7.4	**Web Authoring**		
		Web Site Design, Web Authoring Programs		
	7.5	**Emerging Applications**		
		Virtual Reality, Knowledge-based (Expert) Systems, Robotics		
	7.6	**A Look to the Future: The Future of Artificial**		

8.	**Communications and Networks (Only Introduction)**			
	8.1	**Communications**	**06**	---
		Connectivity, The Wireless Revolution, Communication Systems		
	8.2	**Communication Channels**		
		Physical Connections, Wireless Connections		
	8.3	**Connection Devices**		
		Modems , Connection Service		
	8.4	**Data Transmission**		
		Bandwidth, Protocols		
	8.5	**Networks**		
		Terms		
	8.6	**Network Types**		
		Local Area Networks, Home Networks, Metropolitan Area Networks, Wide Area Networks		
	8.7	**Network Architecture**		
		Configurations		
	8.8	**Making IT Work for You: Home Networking Strategies**		
	8.9	**Organizational Internets: Intranets and Extranets**		
		Intranets, Extranets, Firewalls		
	8.10	**A Look to the Future: Toyota and Sony Create Wireless Robotic Car**		
9.	**Cyber Law & Cyber Security**			
	9.1	Introduction to Cyber Security, Security issues related to Information, Internet Security, Data Security and Information Security. Cyber Law associated with violation of security.	**02**	**---**
		Total	**48**	**---**

List of Practicals/Experiments/Assignments:

Sr. No.	Name of Practical/Experiment/Assignment	Hrs
1.	**Demonstrate types of Computers**.	02
	Demonstrate use of various I/O Devices. **(Maximum Devices Available in the LAB as per theory should be demonstrated)**	
	Functioning of Cathode Ray Tube, TFT/Flat Monitors and other monitors	
	Introduction of interface of other output devices like Fax Machines, Internet phones, Digital Camera etc.	
	Functioning of various types of Audio-Output Devices.	
2.	**Functions and working of Secondary Storage devices**	04
	Types of Secondary Storage devices.	
	Installation, configuration and setting of Hard Disks.	
	BIOS Settings for Primary and secondary Memory.	
	Installation and working of CD-ROM/DVD-ROM/ DVD-Combo/ DVD-Writer (Internal and External).	
	Future of Secondary Storage Devices.	
3.	Practice of basic commands in command window: Ex: dir, md, copy, cd, move, rmdir, rd etc.	04
4.	**Operating System**	04
	Various operations on Window based operating system.	
	Windows Operations: Minimising, Maximising, Resizing.	
	Using Windows Help.	
	Creating, copying, moving files and folders.	
	Creating shortcuts.	
	Creating and Removing/Deleting User Accounts.	
	Setting window views.	
	Using Add /Remove Programs Utility.	
	Using Add Hardware Utility	
	Adding Fonts.	
	Viewing Computer Configuration.	
	Desktop settings: Display properties, time and date setting, Screen Saver , Appearance	

5.	**Application software**	
	Word Processors	
	Hands on Word Processors.(Ex: MS WORD, OpenOffice.org)	
	Various options and its use in creating/ updating/ printing/ Adding Image/mail merge etc. (Perform at least 5 assignments Covering all menu items). Spreadsheets:	
	Assignments based on use of Spreadsheets &Various menu items and its use in worksheets to solve problems. (Perform at least 5 assignments using any spreadsheet software) Presentation Graphics:	**07**
	Preparation of Various slides (Perform at least 5 assignments covering Presentation Graphics like objects grouping, Customising Slide transition, Embedding Links)	
6	**Database Management System**	
	Creation of tables using DBMS tools like MS Access. (Teachers should frame their own assignments for above tools which covers maximum features provided by respective softwares).	**07**
7.	**Introduction to Internet and WWW**	
	Conduct minimum 2 assignments on Internet and Web, like creating mail accounts, using web based applications, browsing internet sites to fetch relevant information, etc.	**02**
	Introduction to e-Commerce and related web sites. Example Railway Reservations, Air Ticket Reservations etc..	**02**
	Total	**32**

Text Books:

Sr. No	Author	Title	Publication
1.	Timothy J. O. Leary	Computing Essentials	TMH
2.	Vikas Gupta	Comdex Computer Course Kit	Dreamtech

Reference Books:

Sr. No	Author	Title	Publication
1.	Computer Fundamentals	BPB	P.K. Sinha
2.	Information Technology for Management	Tata McGraw Hill	Henry C. Lucas, Jr.

Learning Resources: Books, Models

(Prof. Smt. M. H. Thakre)	**(Prof. S. B. Kulkarni)**	**(Prof.C.C. Dandvatimath)**
Prepared By	**Secretary, PBOS**	**Chairman, PBOS**

Programme : Diploma in CE
Programme Code : 01/15
Name of Course : Electrification of Buildings
Course Code : EE 264

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**02**	**32**
Practical	**02**	**32**

Evaluation Scheme:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Two class tests, each of 60 Min. duration	03 Hrs	---	---	---
Marks	**20**	**80**	---	---	**25**

Course Rationale:

Civil Engineers are required to supervise the work at construction sites and buildings. They should be aware of different aspects of electrification of buildings viz. Residential and Industrial, which are introduced in the subject.

Course Objectives:

After studying this course, the student will be able to

- Choose proper wiring components and wiring systems as per requirement.
- Understand illumination schemes required for building lighting.
- Understand the requirements of electrification building.
- Understand the work done by electrical contactor for electrification building.
- Calculate electricity bill of domestic consumers as per M.E.R.C. norms.
- Select proper stand by power supply as per requirement.
- Be aware of electrical hazards and safety precautions.
- Supervise effectively the electrification of buildings

Course Content:

Chapter No.	Name of Topic/Sub topic		Hrs	Weightage
1.	**Illumination**			
	1.1	Introduction, advantages, disadvantages, connections & applications of lamps such as incandescent lamp, sodium vapour lamp, fluorescent tube, CFL.	**05**	**12**
	1.2	Lighting schemes- direct, indirect, semi-direct & semi-indirect.		
	1.3	Terms used in illuminations such as luminous flux, luminous intensity, lumens, candle power, illumination, lux, glare, space-height ratio, utilization ratio, maintenance factor.		
	1.4	Design of indoor lighting scheme for office & residential building as per standard required illumination level. (Simple numerical).		
2.	**Residential Installation**			
	2.1	Purpose, selection & specification of wires and cables.	**08**	**20**
	2.2	Purpose, selection & specification, use & type of wiring components such as main switch, D.P. switch, S.P. switch, two way switch, D.P.D.T. switch, Fuses, MCB, ELCB, ceiling roses, fixtures, socket outlet, lamp holder, sub-circuit board, distribution board.		
	2.3	Introduction, advantages, disadvantages & field of applications of different wiring system such as cleat, casing-caping & conduit (surface & concealed) wiring system.		
	2.4	Electric fan - Purpose, types, specifications & electrical circuit of electric fan.		
	2.5	Wiring circuit for -Fluorescent tube. -One lamp controlled from one switch. - Two lamps controlled from two switches. - Staircase wiring. - One lamp, one fan & socket outlet circuit. - looping of above circuit.		

	2.6	Requirements of residential installation.		
	2.7	Important guidelines for residential installation.		
	2.8	Methods of measurement of electrical work done in residential building.		
3	**Service Connections &Earthing**			
	3.1	Service connections for residential & industrial building.(i.e. L.T. & H. T. Connections)	**04**	**10**
	3.2	Earthing: purpose, I.S. standard regarding earthing of electrical installation of building, what equipments are to be connected to earth?		
	3.3	Different methods of earthing such as strip, rod, pipe & plate.		
4	**Industrial Wiring.**			
	4.1	Power wiring of motor circuit, motor branch circuit.	**04**	**10**
	4.2	Cable laying & cable trench.		
	4.3	Important guidelines for industrial installation.		
	4.4	Comparison of installation for residential and industrial buildings w. r. t. types of loads, types of wires, types of wiring system etc.		
5	**Electrical Energy and Tariff**			
	5.1	Concept of energy, measurement of energy by energy meter & energy meter connection.	**03**	**08**
	5.2	Tariff-concept, residential tariffs as per M.E.R.C. or M.S.D.E.C., Electricity bill calculation for residential consumer.		
6	**Stand by electrical power**			
	6.1	Common power problems, purpose of UPS, types of UPS, specifications of UPS	**04**	**08**
	6.2	Storage battery: Purpose, battery connections, efficiency of battery, battery ratings, methods battery charging.		
	6.3	Electrical power by D.G. set: Operation of D.G. set with block diagram, merits & demerits. -Emergency light,		
7	**Electrical Safety**			
	7.1	Indian Electricity rules for safety of person & equipment followed when working with electrical installation.	04	12

	7.2	General Safety practices in electrical work.		
	7.3	Electrical Accidents-meaning and causes.		
	7.4	Electric shock, Factors on which intensity of electric shock depends, Procedure for rescuing a person who has received an electrical shock.		
	7.5	Electrical fire: causes of fire, precautions to avoid fire, types of fire extinguishers & its use according to type of fire.		
		Total	**32**	**80**

List of Practicals/Experiments/Assignments:

Sr. No.	**Name of Practical /Experiment/Assignment**	**Hrs**
1.	Study of different types of lamps.	**02**
2.	Measurement of flux of existing office or conference hall or library or class room & draw a lay out. Also state whether existing illumination is as per standard.	**02**
3.	Design lighting scheme for (2) .i.e. same place with same source of light but for different illumination level as per standard.	**04**
4.	Demonstration of use & tripping of MCB against overload & short circuit.	**02**
5.	Demonstration of use & tripping of ELCB against leakage current.	**02**
	Drawing Sheets on	
6.	Wiring accessories.	**02**
7.	Conventional symbols used in wiring.	**02**
8.	Wiring circuit for staircase wiring, godown wiring, electrical fan & fluorescent tube.	**02**
	Drawing Sheets	
9.	A) Service connection of residential and industrial building. B) Earthing (pipe & plate) as per standard.	**04**
10.	Connection of three phase induction motor & reversal of its direction and list out essential equipments required for motor circuit.	**04**
11.	Measurement of energy by energy meter.	**02**
12.	Case study: Electrical bill calculation of any domestic consumer.	**04**
	Total	**32**

Instructional Strategy:

Sr. No.	Topic	Instructional Strategy
1.	Illumination	Lecture, Visit & Problem solving.
2.	Residential Installation	Lecture, Visit.
3.	Service Connections &Earthing	Lecture, Visit & demonstration.
4.	Industrial wiring	Lecture, Visit.
5.	**Electrical Energy and Tariff**	Lecture & Problem solving.
6.	Stand by electrical power	Lecture, Visit.
7.	Electrical Safety	Lecture, Q/A Technique.

Text Books:

Sr. No	Author	Title	Publication
1.	Surjit Singh	Electrical estimation & costing	Khanna Publishers
2.	M.L. Ghosh	Electrical Trade Theory.	T M H , Delhi

Reference Books:

Sr. No	Author	Title	Publication
1.	D.G.Fink, H.W. Bealy.	Standard Handbook for Electrical Engineers.	----
2.	Dale Patrik and S,.W. Fardo	Industrial Electrical System	----
3.	Uppal	Electrical Wiring, Estimation and Costing	Khanna Publishers

Learning Resources:

Handouts, charts, models

Specification Table:

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Illumination	04	02	06	12
2.	Residential Installation	08	04	08	20
3.	Service Connections &Earthing	04	04	02	10
4.	Industrial wiring	04	04	02	10
5.	**Electrical Energy and Tariff** Stand by electrical	02	02	04	08
6.	power	04	04	00	08
7.	Electrical Safety	04	04	04	12
	Total	**30**	**24**	**26**	**80**

(Prof. K.M. Kakade)
Prepared By

(Prof. S. B. Kulkarni)
Secretary, PBOS

(Prof.C.C. Dandvatimath)
Chairman, PBOS

Programme : Diploma in CE / ME / MT
Programme Code : 01/ 04 /05 /15/18/19
Name of Course : Engineering Graphics
Course Code : ME 262

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**02**	**32**
Practical	**04**	**64**

Evaluation Scheme:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Two class tests, each of 60 minutes	4 hrs.	--	--	--
Marks	**20**	**80**	--	--	**25**

Course Rationale:

Engineering drawing is the graphical language. It is used by engineers, designers, planners, supervisors and also the workers to express their thoughts, ideas and concepts. The expression by drawing is very accurate, precise and brief. At a glance one can understand detailed description of any part to be manufactured or a dam to be built or an electric circuit to be used. For all technicians through understanding of principles of engineering drawing (Graphic Skills) is essential.

Course Objectives:

After studying this course, the student will be able to

- Draw various engineering curves.
- Incorporate Indian Standards in drawings.
- Sketch various orthographic and isometric views.
- Draw all different views from given components vis-à-vis.
- Draw free hand sketches.

Course Content:

Chapter No.	Name of Topic/Sub topic		Hrs	Weightage
1.	**Introduction of Drawing Instruments, Lines, Letters etc.**			
	1.1	Use of different drawing equipments.	**02**	**--**
	1.2	Type of letters.		
	1.3	Conventions of lines.		
	1.4	Scales.		
2.	**Curve and Tangential Exercises**			
	2.1	Geometrical constructions and tangential exercises.	**03**	**12**
	2.2	To draw an ellipse by concentric circle method.		
	2.3	To draw a parabola by : i) Directrix focus method.		
	2.4	To draw a hyperbola by : i) Directrix focus method.		
	2.5	To draw in volute of circle.		
	2.6	To draw a cylindrical helix (limited to two turns)		
	2.7	To draw cycloid, epicycloids and hypocycloid.		
3.	**Orthographic Projections**			
		Introduction to orthographic projections first and third angle method of projection. Conversion of simple pictorial view, Dimensioning technique.	**06**	**12**
4.	**Sectional Orthographic Projections**			
		Introduction, converting the given pictorial view into sectional views.	**04**	**12**
5.	**Missing Views**			
		Interpretation of orthographic view, drawing of missing views from given two orthographic views	**03**	**08**
6.	**Projection of Lines, Planes and Solids**			
		Axis inclined to one plan only Concept of true length of a line, projection of Planes, & Regular solids such as Cylinder, Prism Cone and Pyramid.	**06**	**12**
7.	**Isometric Views**			
	7.1	Isometric scale and isometric views of simple objects.	**06**	**12**
	7.2	Isometric views of rectangular, cylindrical objects, Slots on sloping surface.		

8.	**Free Hand Sketches**			
		Fasteners, temporary threaded fasteners, locking arrangement, Foundation Bolts.	**02**	**12**
		Total	**32**	**80**

List of Practicals/Experiments/Assignments:

Sr. No.	Name of Experiment/Assignment	Hrs
Six sheets on topics covered in the syllabus.		
1.	Line letters and numbers. (Sheet No.1)	06
2.	Engineering curves and tangential exercises. (Sheet No.2)	06
3.	Orthographic projection, Sectional views (Sheet No.3)	16
4.	Missing views. Projection of lines, planes and solids (Sheet No.4)	12
5.	One sheet Isometric projection. Minimum Two Problems. (Sheet No.5)	16
6.	Free hand sketches. (Sheet No.6)	08
	Total	**64**

Instructional Strategy:

Sr. No.	Topic	Instructional Strategy
1.	Introduction to Drawing instruments lines letters etc.	Classroom teaching and Demonstration.
2.	Curves and tangential exercises	Demonstrations and classroom teaching.
3.	Orthographic projection	Use of models and classroom teaching.
4.	Sectional views	Use of models, transparencies and classroom teaching.
5.	Missing views	Classroom teaching, self study and assignments.
6.	Projection of lines, planes and solids	Classroom teaching and assignments.
7.	Isometric views	Classroom teaching and use of models.
8.	Free hand sketches	Classroom teaching and assignments & use of Models.

Text Books:

Sr. No	Author	Title	Publication
1.	N.D. Bhatt	Elementary Engg. Drawing (Including plan and solid geometry)	Charotar Publication, Anand.
2.	Mali, Choudhary	Engineering Drawing	Vrinda Prakashan, Jalgaon

Reference Books:

Sr. No	Author	Title	Publication
1	N.D. Bhatt	Geometrical and Machine Drawing	Charotar Publication, Anand.
2	--	I.S. 696 Latest version	B.I.S.
3	Curriculum Development Centre, TTTI, Bhopal	A Workbook in Engineering Drawing	Somaiyya Publication Pvt. Ltd., Mumbai
4	--	SP 46 – 1988	B.I.S.
5	G.R. Nagpal	Machine Drawing	--
6	K. Venugopal	Engineering Drawing and Graphics + AutoCAD	New Age International Publishers.

Learning Resources: Video cassettes No. 122, 123 of G.P.P. Library

Specification Table:

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Introduction to Drawing instruments lines letters etc.	--	--	--	--
2.	Curve and Tangential exercises	12	--	--	12
3.	Orthographic Projection	--	12	--	12
4.	Sectional views	--	12	--	12
5.	Missing views	--	--	08	08
6.	Projection of lines, planes and solids	--	12	--	12
7.	Isometric views	--	--	12	12
8.	Free hand sketches	12	--	--	12
	Total	**24**	**36**	**20**	**80**

(Prof.M.R.Mundhe)
Prepared By

(Prof. S. B. Kulkarni)
Secretary, PBOS

(Prof.C.C. Dandvatimath)
Chairman, PBOS

Programme : Diploma in CE / MT
Programme Code : 01/ 05/15/19
Name of Course : Workshop Practice
Course Code : WS 261

Teaching Scheme:

	Hours /Week	Total Hours
Theory	--	--
Practical	**04**	**64**

Evaluation Scheme:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	--	--	--	--	--
Marks	--	--	--	--	**50**

Course Rationale:

To make the students conversant with use of various workshop tools used in smithy, carpentry, fitting, welding and plumbing shops.

Course Objectives:

After studying this course, the student will be able to

- Interpret the assigned job drawing.
- Identify various tools used in different shops of Work shop.
- Select appropriate tool set to perform a specific job.
- Acquire skills to use various tools.
- Take care and maintain the tools.

Course Content:

Chapter No.	Name of Topic/Sub topic	Hrs	Weightage
1.	**Sketch of smithy/forging Hand tools**, Equipments, with construction and Application.	08	05
2.	**Sketch of carpentry hand & power tools**, Equipment with construction and application	14	10
3.	**Sketch of fitting and filling hand tools**, equipment with construction and application	14	10
4.	**Sketch of welding hand tools**, Equipment with construction and application.	14	10
5.	**Sketch of plumbing hand tools,** equipment with construction and application.	14	10
6.	Journal writing and submission on above given topics	--	05
	Total	**64**	**50**

List of Practicals/Experiments/Assignments:

Sr. No.	Name of Practical/Experiment/Assignment	Hrs
1.	Demo of job involving minimum three operations. e.g. Upsetting, Drawing Down, Bending, Setting down.	08
2.	One useful carpentry job involving carpentry joints and wood turning	14
3.	One useful fitting job involving Marking, Filing, Sawing, Drilling, Tapping	14
4.	One useful welding Job Involving welding joints.	14
5.	One job in plumbing of pipe threading and pipe joints.	14
	Total	**64**

Instructional Strategy:

Sr. No.	Topic	Instructional Strategy
1.	Smithy and forging	Explanation, Demonstration, exhibition of Models/samples pieces.
2.	Carpentry	
3.	Fitting and filling	
4.	Welding	
5.	plumbing	

Text Books:

Sr. No	Author	Title	Publication
1.	Mali and Ghan	Elements of electrical and mechanical technology(Mechanical technology portion)	Nirali and Pragati Prakashan
2.	Deshmukh Mandke	Elements of electrical and mechanical technology(Mechanical technology portion)	Nirali Prakashan
3.	Choudhari M.A.	Elements of electrical and mechanical technology(Mechanical technology portion)	Sandeep Prakashan, Pune

Reference Books:

Sr. No	Author	Title	Publication
1.	S. K. Hajara Choudhari A. K. Hajara houdhari	Elements of workshop technology – Vol. I	Media promoters and Publishers Pvt. Ltd., Mumbai-7
2.	V. Kapoor	Workshop practice Manual	Dhanpat Rai and sons, New Delhi – 32
3.	B. S. Raghuwanshi	A course in workshop technology Vol-I	Dhanpat Rai and sons, New Delhi – 32.

Learning Resources: Demonstration kit, charts, models/sample pieces and books. video cassette no.134 and 367 of G.P.P. library

Specification Table:

Sr. No	Topic	Cognitive	PSYCHOMOTOR			Total
		Knowledge	Imitation	Manipulation	Perfection	
1.	Smithy and forging	05	--	--	--	5
2.	Carpentry	03	02	03	02	10
3.	Fitting and filling	03	02	03	02	10
4.	Welding	03	02	03	02	10
5.	Plumbing	03	02	03	02	10
6.	Journal writing and submission on above given topics	05	--	--	--	5
	Total	**25**	**25**	**25**	**25**	**50**

(Prof. Hamid Zaheer)
Prepared By

(Prof. S. B. Kulkarni)
Secretary, PBOS

(Prof.C.C. Dandvatimath)
Chairman, PBOS