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INTRODUCTION

The Government of Haryana has introduced the Lateral Entry Scheme to Diploma Engineering Courses and Office Management and Computer Application Diploma for ITI Pass-outs and 10+2 (PCU)/ 10+2 (Vocational Course). The Scheme shall commence from 2006-07. The objective of the scheme is to allow student of ITI with one year diploma (Who pass 10th level school examination before admission to ITI courses) and 10+2 (Vocational) / 10+2 (PCM) for lateral entry in the second year (3rd Semester) of various diploma courses. The State Government aims to extend the facility to the students who have ITI certificate to provide mobility and with a view to attract 10+2 students to diploma stream.

For the ITI pass student, after getting admission in diploma stream through lateral entry i.e. in second year of diploma programmer, will have to undergo courses in Applied Physics, Applied Chemistry, Applied Mathematics and English and Communication skills in the third and fourth semesters as bridge courses, in addition to prescribed courses of third and fourth semesters of their respective diploma programmers. However, these students may be exempted from the subjects of Basics of Information Technology, Engineering Drawing and Workshop Practice.

Similarly, the students seeking admission under the Lateral Entry Scheme after 10+2 (Vocational) and 10+2 with PCM will have to undergo courses in Basics of Information Technology, Engineering Drawing and Workshop Practice in the third and fourth semesters as bridge courses, in addition to prescribed course of third and fourth semesters of third respective diploma programmers. The students of 10+2 (Vocational) will also study a subject on Applied Science in fourth semester comprising of Applied Physics and Applied Chemistry. However, the students of 10+2 (PCM) may be exempted from the Communication skills and the students of 10+2 (Vocational) may be exempted from the subjects of Applied Mathematics and English and Communication Skills.

THE COMPATIBILITY OF POLYTECHNIC COURSES FOR ITI PASS OUTS UNDER THE LATERAL ENTRY IS PROPOSED BELOW:

Sr. No	Branch Name	Code	Branch Name
1.	Agriculture Technology	01	1) Mechanic (Diesel)
			2) Mechanic (Tractor)
			3)Mechanic (Agriculture Machinery)
2.	Architectural Assistantship	02	1) Draftsman (Civil)
3.	Automobile Engineering	03	1) Mechanic (Diesel) 2) Mechanic (Tractor) 3) Automobile (COE) 4)Mechanic(Motor Vehicle)
4.	Civil Engineering	07	1) Plumber 2) Draftsman (Civil) 3) Pattern Maker 4) Surveyor
5.	Computer Engineering Electrical Engineering Electronics and Communication Engineering Information Teleology Instrumentation and Control Medical Electronics		1)Computer Hardware Mechanic 2)Information Technology Equipment Services and Maintenance 3) Computer Operator and Programming Assistant 4) Electrician 5) Wireman 6) Computer Hardware Mechanic 7) Consumer Electronics

			8) Electronics Mechanic Mechanic (Radio and TV) 10) Wireless Mechanic Operator 11) Instrumentation (COE) 12) Information Technology and Electronic Systems 13) Instrumentation Mechanic
6.	Mechanical Engineering Mechanical Engineering (Tool and Die) Production Engineering	17 18 23	1) Forger and Heat Treater 2) Mechanic (Diesel) 3) Mechanic (Tractor) 4) Moulder (Foundry man) 5) Sheet Metal Worker 6) Welder (Gas and Electric) 7) Draftsman (Mechanical) 8) Fitter 9) Mechanist 10) Machinist (Grinder) 11) Mechanic (Motor Vehicle) 12) Mechanic (Refrigeration and Air Conditioning) 13) Watch and Clock Repairer 14) Production and Manufacturing (COE) 15) Automobile (COE) 16) Tool & Die Maker (Press Tools, Jigs and Fixtures) 17) Mechanic Machine Tools and Maintenance

			18) Turner 19) Mechanic (Agriculture Machinery)
7.	Plastic Technology	22	1)Plastic Processing Operator
8.	Applied Art and Craft	28	1) Pattern Maker 2) Painter (General)
9.	Fashion Technology	29	1) Fashion Technology
10.	Office Management and Computer Applications	30	1) Stenography (English) 2) Stenography (Hindi)
11.	Fashion Design/Garment Manufacturing Technology	31	1) Cutting and Sewing (Cutting and Tailoring) 2) Dress Making 3)Embroider and Needlework
12.	Electrical Engineering		1) Electroplater

SCHEME FOR THE BRIDGE COURSES

It is proposed that the bridge courses may be offered in the morning and (or) evening sessions as per the details given below:

Enter for	Level	Bridge Course	Time Allotted
LT.L Pass-outs		3rd Semester - Applied Physics - Applied Mathematics 4th Semester - Applied Chemistry - English & Communication Skills	1 1/2 Hrs duration in the Morning and 1 1/2 Hrs duration in the Evening Sessions per day for 5 days a week Total duration = 1 1/2 x 5 x 16 = 120 Hrs per semester for each subject
10+2 (PCM) / 10)2 (Voc) 10)2 (Voc)		3rd Semester - Basics of information Technology - Engineering Drawing 4th Semester - Workshop Practice - Applied Science (only for 10+2 (Vocational))	3 Hrs duration in the Morning or Evening Sessions per day for 2 1/2 days a week Total duration = 3x 2 1/2 x16 = 120 Hrs Per semester for each subject

STUDY AND EVALUATION SCHEME FOR BRIDGE COURSES TO LATERAL ENTRY DIPLOMA PROGRAMMES

Sr. No.	Identity	Subject	Contact Hours		EVALUATION SCHEME						Total Marks
					Internal Assessment		External Assessment (Examination)				
					Theory	Practical	Written Paper		Practical		
			Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.			
Theory		Practical									
1.	060041	English and Communication Skill	80	40	25	25	100	3	50	2	200
2.	060032	Applied Mathematics	80	-	50	-	100	3	-	-	150
3.	060033	Applied Physics	64	16	25	25	100	3	50	3	200
4.	060044	Applied Chemistry	60	20	25	25	100	3	50	3	200
5.		Basics of Information Technology	-	120	-	50	-	-	100	3	150
6.	060035	Engineering Drawing	-	120	-	50	100	3	25	2	175
7.		General Workshop Practice	-	120	-	50	-	-	100	3	150
8.	060047	Applied Science	80	-	50	-	100	3	-	-	150

1. ENGLISH AND COMMUNICATION SKILLS

060041

Time Allotted = 5 Hrs/Week

Total Contact Hours= 5 x 16 = 80

Theory = 60 Hrs

Practical = 20 Hrs

RATIONALE

The state of Haryana has allowed lateral entry in the second year of different 3-year Diploma courses.

This is with a view to provide vertical mobility to talented aspirants. The lateral admission is available to the scholars who have passed their ITI Certificate courses or Class XII from a recognized Board.

The subject of English and Communication Skills is compulsory for the first two semesters of various 3-year diploma courses. However, the students with lateral entry to the second year of these courses would be deprived of the benefit of instruction in English and Communication Skills. They would thus be broadly handicapped. This Bridge Course has been designed for lateral entry students. It will largely compensate them for having missed the prescribed course in first two semesters. This course includes topics on grammar, composition and Communication Skills etc. English is the international lingua franca. A sound knowledge of the basics of English is a must for these scholars. Hence this subject is made a part of the curriculum.

1. Comprehension from unseen passages (10hrs)
{Note: The teacher should integrate vocabulary building exercises from the Passage}

2. Grammar (36hrs)
 - 2.1 Parts of a Speech
 - Noun
 - Verb
 - Adverb
 - Adjective
 - Preposition

	- Pronoun	
	- Conjunction	
	- Articles	
	2.2 Tenses	
	2.3 Voice	
	2.4 Correction of sentences	
	2.5 Narration	
3.	Vocabulary	(02hrs)
	Administrative terms	
	Technical Terms	
4.	Correspondence	(10hrs)
	4.1 Business	
	4.2 Official	
	4.3 Personal	
5.	Drafting	(08hrs)
	5.1 Notices	
	5.2 Telegrams	
	5.3 Memo	
	5.4 Press releases	
	5.5 Format for report writing	
6.	Translation form regional language to English	(10hrs)
7.	Communication process and essentials of good communication	(04hrs)

LIST OF PRACTICALS

(20hrs)

1. Paper reading before an audience
2. Group discussion
3. Listening comprehension through pre- recorded English learning programmers
4. Introducing self and others
5. Interview techniques through Mock interviews
6. Telephone etiquette- demonstration and practice

Note:-

1. The Text Book on “English and Communication Skills, Book-I By Kuldip Jaidka et.al. Developed by NITTTR, Chandigarh is recommended to be used for teaching & setting-up the question papers.
2. A communication laboratory may be set up consisting of appropriate audio-video system with facility of playing CDs/ DVDs and a video camera for recording the performance of each student with play back facility. A set of CDs from any language training organization e.g. British Council etc. may be procured for use of students.
3. Elements of body language will be incorporated in all practicals.
4. The practical exercises involving writing may also be included in Theory Examination.

RECOMMENDED BOOKS

1. English and communication Skills, Book – I & II BY Kuldip Jaidka, Alwainder Dhillon and Parmod Kumar Singla, Prescribed by NITTTR, Chandigarh published By Abhishek Publication , 57 -59, Sector – 17, Chandigarh
2. Essentials of Business Communication by Pal and Rorualling: Sultan Chand and Sons.
3. The Essence of Effective Communication, Ludlow and Panthon; Prentice Hall of India.
4. New Design English Grammar, Reading and writing Skills by AL Kohli (Course A and course B), Kohli Publishers, 34 Industrial Area Phase-II, Chandigarh.
5. New Design English Reading and Advanced Writing Skills for Class XI XII by MK Kohli and AL Kohli Publishers , 34 Industrial Area Phase-II, Chandigarh.

6. A Practical English Grammar, By Thomson and Marlinet
7. Spoken English by V Sasikumar and PV Dhamija; Tata McGraw Hill
8. English Conversation practice by Grount Taylor; Tata McGraw Hill
9. Developing Communication Skills by Kishna Mohan and Meera Banerji MacMillan India Ltd,Delhi
10. Business Correspondence and report Writing by RC Sharma and Krishna Mohan; Tata McGraw Hill Publishing Company Ltd.New Delhi
11. Communication Skills by Ms R Datta Roy and KK Dhir; Visahal Publication, Jalandhar.

2. APPLIED MATHEMATICS FOR DET (L)

060032

Time Allotted = 5 Hrs/week
Total Contact hrs = 5 x 16 = 80 Hrs

RATIONALE

Applied Mathematics forms the backbone of engineering discipline. Basic elements of permutations and combinations, trigonometry, vector, complex number and statistics have been included in the curriculum as foundation course and to provide base for continuing education to the students.

DETAILED CONTENTS

1. **Algebra** **(18 hrs)**
 - 1.1 Binomial theorem (without proof) for positive integral index (expansion and general Term); Binomial theorem for any index (expansion only)
 - 1.2 Determinants and Matrices – expansion of determinants (upto third order) solution of equations (upto 3 unknowns) by Cramer’s rule. Definition of matrix, addition, subtraction and multiplication of matrices (upto third order). Inverse of a matrix by adjoint method Solution of equations (up to 3 unknowns) by Matrix method

2. **Trigonometry** **(10 hrs)**

Addition and subtraction formulae, product formulae and their application in engineering problems. Transformation from product to sum or difference of two angles or vice versa

3. **Complex Numbers** **(10 hrs)**

Definition, Real and Imaginary parts of a complex number, Polar and Cartesian representation of a complex number and conversion from one form to the other, conjugate of a complex number, modulus and argument of a complex number, addition, subtraction, multiplication and division of a complex number.

4. **Co-ordinate Geometry** **(10 hrs)**
 - 4.1 Area of a triangle, centroid and in centre of a triangle (given the vertices of a triangle), Simple problems on locus
 - 4.2 Equation of straight line in various standard forms (without proof) Angle between two lines.

- 4.3 Circle: General equation and its characteristics given:
- The center and radius
 - The co-ordinates of the end's of the diameter

5. Differential Calculus (16 hrs)

- 5.1 Concepts of differentiation and its physical interpretation
- Differentiation by first principle of x^n , $(ax + b)^n$, $\sin x$, $\cos x$, $\tan x$, $\sec x$, $\operatorname{Cosec} x$ and $\cot x$, e^x , a^x , $\log x$. Differentiation of a function of a function
 - Differentiation of sum, product and quotient of different functions
- 5.2 Application of derivatives for (a) rate measure (b) errors (c) real root by Newton's method (d) equation of tangent and normal (c) finding the maxima and minima of a function (simple engineering problems)

6. Integral Calculus (16 hrs)

- 6.1 Integration as inverse operation of differentiation
- 6.2 Simple integration by substitution by parts
- 6.3 Evaluation of definite integrals (simple problems)
- 6.4 Applications of integration for
- Simple problem on evaluation of area under a curve where limits are prescribed
 - Calculation of volume of a solid formed by revolution of an area about axis (Simple problems) where limits are prescribed

RECOMMENDED BOOKS

1. Engineering Mathematics by BS Grewal
2. Engineering Mathematics (Vol. I & II) by S Kohil and Others, IPH, Jalandhar
3. Engineering Mathematics Vol. I & II by Ishan Publishing
4. Applied Mathematics (Vol. I & II) by SS Sabharwal and Other; Eagle Parkashan Jalandhar
5. Engineering Mathematics by IB Prasad
6. Engineering Mathematics (Vol. I & II) by Dr RD Sharma
7. Advanced Engineering Mathematics by AB Mathur and VP Jagi; Khanna Publishers, Delhi
8. Higher Engineering Mathematics by BS Grewal; Khanna Publishers, Delhi
9. Engineering Mathematics by C Dass Chawla; Asian Publishers, New Delhi

3. APPLIED PHYSICS FOR DET (L)

060033

Time Allotted = 5 Hrs/Week
Total contact Hours = 5 x 16 = 80 Hrs
Theory = 64 Hrs
Practical = 16 Hrs

RATIONALE

Applied physics includes the study of a large number of diverse topics all related to things that go in the world around us. It aims to give an understanding of this world both by observation and prediction of the way in which objects will behave. Concrete uses of physical principles and Analysis in various fields of engineering and technology are given prominence in the course Content.

DETAILED CONTENTS

1. Units and Dimensions

(07 hrs)

- 1.1 Physical quantities
- 1.2 Fundamental and derived units
- 1.3 Systems of units (FPS, CGS, MKS and SI units)
- 1.4 Dimensions and dimensional formulae of physical quantities (area, volume, Velocity, acceleration, momentum, force, impulse, work, power, energy)
- 1.5 Principle of homogeneity
- 1.6 Dimensional equations and their applications, conversion from one unit to another Unit for density, force, pressure, work, power, energy, velocity, acceleration

2. Force and Motion

(10 hrs)

- 2.1 Scalar and vector quantities – examples, addition and multiplication (scalar Product and vector product) of vectors
- 2.2 Force, resolution and composition of forces – resultant, triangle law and parallelogram law of forces
- 2.3 Newton's Laws of motion – concept of momentum, Newton's laws of motion and Their applications, determination of force equation from Newton's second law of Motion; Newton's third law of motion conversion of momentum, impulse and Impulsive forces, simple numerical problems based on third law.
- 2.4 Circular motion
- 2.5 Relation between linear and angular velocity and linear acceleration and angular Acceleration
- 2.6 Centripetal force (derivation) and centrifugal force

- 3. Work, Power and Energy (7 hrs)**
- 3.1 Work: definitions and its SI units
 - 3.2 Work done in moving an object on horizontal and inclined plane (Incorporating Frictional forces)
 - 3.3 Power: definitions and its SI units, calculation of power in simple cases
 - 3.4 Energy: Definitions and its SI units: Types: Kinetic energy and Potential energy, with examples and their derivation
 - 3.5 Principle of conservation of mechanical energy (for freely falling bodies), Transformation of energy from one form to another
- 4. Properties of Matter (8 hrs)**
- 4.1 Pressure – its units, gauge pressure, absolute pressure, atmospheric pressure, Manometers and barometer gauges
 - 4.2 Surface tension – its units, applications of surface tension, effect of temperature and impurity on Surface tension
 - 4.3 Definitions of viscosity and coefficient of viscosity; effect of temperature on Viscosity
- 5. Waves and vibrations (10 hrs)**
- 5.1 Simple Harmonic Motion: Definition with example
 - 5.2 Free, forced and resonant vibrations with examples
 - 5.3 Wave motion with examples
 - 5.4 Types of wave motion, transverse and longitudinal wave motion with examples
 - 5.5 Velocity, frequency and wave length of a wave (relationship $v = n \lambda$)
- 6. Rotational Motion (4 hrs)**
- 6.1 Kinetic energy of rotation
 - 6.2 Definitions of torque, moment of inertia, angular momentum, radius of gyration
 - 6.3 Conservation of angular momentum (qualitative)
- 7. Transfer of Heat (3 hrs)**
- 7.1 Modes of transfer of heat (conduction, convection and radiation with examples)
 - 7.2 Coefficient of thermal conductivity
 - 7.3 Heat radiation

8. Electrostatics (6 hrs)

- 8.1 Coulombs law, unit charge
- 8.2 Electric field intensity and electric potential
- 8.3 Capacitance, capacitance of parallel plate capacitor, series and parallel combination of capacitors
- 8.4 Dielectric and its effect on capacitors, dielectric constant and dielectric break
Down

9. Electricity (5 hrs)

- 9.1 Ohm's law
- 9.2 Resistance of a conductor, specific resistance, series and parallel combination of resistors, effect of temperature on resistance
- 9.3 Kirchhoff's laws
- 9.4 Heating effect of current and concept of electric power, electrical energy and their units

10. Semi conductor physics (5 hrs)

- 10.1 Conductors, insulator and semi conductors, intrinsic and extrinsic semi conductors, p-n junction diode and its characteristics
- 10.2 Diode as rectifier – half wave and full wave rectifier, semi conductor transistor pnp and npn (concept only)

LIST OF PRACTICALS (16 hrs)

- 1. To find the thickness of wire using a screw gauge
- 2. To find volume of solid cylinder and hollow cylinder using a vernier calliper
- 3. To determine the thickness of glass strip and radius of curvature of a concave surface using a thermometer.
- 4. To determine the atmospheric pressure at a place using Fortin's Barometer
- 5. To verify Ohm's law
- 6. To verify law of resistances in series and in parallel
- 7. To study characteristics of a pn junction diode

RECOMMENDED BOOKS

- 1. Applied Physics Vol. I, TTTI Publication Tata McGraw Hill, Delhi
- 2. Basic Applied Physics by RK Gaur; Dhanpat Rai Publications

3. Comprehensive Practical Physics - Volume I and II by JN Jaiswal; Laxmi Publishers
4. Numerical Problems in Physics - Volume I and II by RS Bharaj; Tata McGraw Hill
5. Simple Course in Electricity and Magnetism by CL Arora; S Chand and Co, New Delhi
6. Fundamental Physics - Volume I and II by Gomber and Gogia; Pardeep Publications, Jalandhar
7. A Text Book of Optics by Subramanian and Brij Lal
8. Physics Laboratory Manual by PK Palanisamy, Scitech Publications
9. Fundamentals of Physics by Resnick and Halliday, Asian Books Pvt. Ltd., New Delhi
10. Concepts in Physics by HC Verma; Bharti Bhawan Ltd., New Delhi

4. APPLIED CHEMISTRY FOR DET-L

ID 60044

Time Allotted = 5 Hrs/Week
Total Contact Hours = 5 x 16 =80 Hrs
Theory = 80 Hrs
Practical = 20 Hrs

RATIONALE

The role of Chemistry and chemical products in every branch of engineering is expanding greatly. Now a days various products of chemical industries are playing important role in the field of engineering with increasing number of such products each successive years. The strength of materials, the chemical composition of substances, their behaviour when subjected to different treatment and environment, and the laws of heat and dynamic energy have entered in almost every activity of modern life. Chemistry is considered as one of the core subjects for diploma students in engineering and technology for developing in them scientific temper and appreciation of chemical properties of materials, which they have to handle in their professional career. Effort should be made to teach this subject through demonstration and with the active involvement of students.

DETAILED CONTENTS

1. **Language of Chemistry** (8 hrs)
 - 1.1 Definition of symbol, formula, valency and chemical equation.
 - 1.2 Writing of the chemical formula of a simple chemical compound. Calculation of percentage composition of a chemical compound.
 - 1.3 Balancing of a chemical equation by Hit and Trial method.

2. **Water** (8 hrs)
 - 2.1 Hard and soft water, types of hardness and its causes, disadvantages of hardness of water (i) in industrial use (ii) in boilers for steam generation.
 - 2.2 Definition of degree of hardness of water.
 - 2.3 Qualities of water used for drinking purposes.

3. **Solutions** (6 hrs)
 - 3.1 Definition of (i) Solution (ii) Ionization (iii) Acidity (iv) Basicity (v) Equivalent Weight and gram equivalent weight with suitable examples.
 - 3.2 A brief introduction of the following terms (i) Normality (ii) Molarity of a solution.

4. **Electrolysis** (6 hrs)
- 4.1 Definition of the terms: Electrolytes, Non-electrolytes conductors and non-conductors with suitable examples
 - 4.2 Different industrial applications of 'Electrolysis'
5. **Metallurgy** (10 hrs)
- 5.1 A brief introduction of the terms: Metallurgy (types), mineral, ore, gangue or matrix, flux, slag, concentration (methods of concentrating the ores), roasting calcination and refining as applied in relation to various metallurgical operations
 - 5.2 Definition of an alloy, purposes of alloying and uses of brass.
6. **Fuels** (10 hrs)
- 6.1 Definition of a 'Fuel', characteristics of a good fuel and classification of fuels with suitable examples.
 - 6.2 Definition of Calorific value of a fuel.
 - 6.3 Qualities of a good fuel and merits of gaseous fuels over those of other varieties of fuels.
 - 6.4 Manufacture, composition, properties and uses of (i) Water gas (ii) Oil gas
7. **Corrosion** (5 hrs)
- Definition of 'corrosion' and methods of its prevention.
8. **Lubricants** (7 hrs)
- 8.1 Definition of (i) lubricant (ii) lubrication
 - 8.2 Classification of lubricants
 - 8.3 Characteristics of a lubricant such as viscosity, viscosity index, emulsification, flash point, fire point and pour point.

LIST OF PRACTICALS (20 hrs)

1. Preparation of standard solution of oxalic acid or potassium dichromate.
2. Determine the strength of a given solution of sodium hydroxide with the help of a standard solution of oxalic acid.
3. Determine, pH of water sample using pH meter.

4. To determine the percentage composition of a mixture consisting of a volatile and a non-volatile substances.
5. Estimate the amount of moisture in the given sample of coal.
6. Estimate the amount of ash in the given sample of coal.
7. Electroplate the given strip of Cu with Ni.

RECOMMENDED BOOKS

1. Chemistry in Engineering by J.C. Kuriacose and J. Rajaram; Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. Engineering Chemistry by Dr. S. Rabindra and Prof. B.K. Mishra ; Kumar and Kumar Publishers (P) Ltd. Bangalore-40.
3. “A Text Book of Applied Chemistry-I” by SS Kumar; Tata McGraw Hill, Delhi.
4. Engineering Chemistry by Jain PC and Jain M.
5. Chemistry of Engineering by Aggarwal CV.
6. Chemistry for Environmental Engineers by Sawyer and McCarty, McGraw Hill, Delhi.
7. Progressive Applied Chemistry –I and II by Dr. G.H. Hugar; Eagle Prakashan, Jalandhar.

5. BASICS OF INFORMATION TECHNOLOGY

060037

Time Allotted = 7¹/₂ HrsWeek Total
Contact Hours = 7¹/₂ x 6 = 120

RATIONALE

Information technology has great influence on all aspects of life. Almost all work places and living environment are being computerized. In order to prepare diploma holders to work in these environments, it is essential that they are exposed to various aspects of information technology such as understanding the concept of information technology and its scope; operating a computer; use of various tools of MS office; using internet etc. form the broad competency profile of diploma holders. This exposure will enable the students to enter their professions with confidence, live in a harmonious way and contribute to the productivity.

Note:

1. Teaching o/theory should be dovetailed with practical work
2. The following topics may be taught in the laboratory along with the practical exercises.

DETAILED CONTENTS

1. Information Technology - its concept and scope
2. Computers for information storage, information seeking, information processing and information transmission
3. Elements of computer system, computer hardware and software; data - numeric data, Alpha numeric data; contents of a program, processing
4. Computer organization, block diagram of a computer, CPU, memory
5. Input devices; keyboard, mouse etc; output devices; VDU and Printer, Scanner, Plotter
6. Electrical requirements, inter-connections between units, connectors and cables
7. Secondary storage; magnetic disks - tracks and sectors, optical disk (CD and DVD Memory), primary and secondary memory: RAM, ROM, PROM etc., Capacity; device controllers, serial port, parallel port, system bus.
8. Exercises on file opening and closing; memory management; device management and input - output (I/O) management with respect of windows
9. Installation concept and precautions to be observed while installing the system and software
10. Introduction about Operating Systems such as MS-DOS and Windows.
11. Special features, various commands of MS word and MS-Excel

12. About the internet - server types, connectivity (*TCP/IP*, shell); applications of internet like: e-mail and browsing
13. Various Browsers like WWW (World wide web); hyperlinks; HTTP (Hyper Text Transfer Protocol); FTP (File Transfer Protocol)
14. Basics of Networking – LAN, WAN, Topologies.

LIST OF PRACTICALS

1. Given a PC, name its various components and list their functions
2. Identification of various parts of a computer and peripherals
3. Practice in installing a computer system by giving connection and loading the system software and application software
4. Installation of Dos and simple exercise on TYPE, REN, DEL, CD, MD, COPY TREE, BACKUP commands.
5. Exercises on entering text and data (Typing Practice)
6. Installation of Windows 98 or 2000 etc.
 - (1) Features of Windows as an operating system
 - Start
 - Shutdown and restore
 - Creating and operating on the icons
 - Opening closing and sizing the windows
 - Using elementary job commands like - creating, saving, modifying, renaming, finding and deleting a file
 - Creating and operating on a folder
 - Changing setting like, date, time color (back ground and fore ground)
 - Using short cuts
 - Using on line help

7 MS-WORD

- File Management: Opening. Creating and saving a document, locating files, Copying contents in some different file(s), protecting files, giving password, Protection for a file

- Page set-up: Setting margins, tab setting, ruler, indenting
- Editing a document: Entering text, Cut, copy, paste using tool- bars
- Formatting a document: Using different fonts, changing font size and colour, changing the appearance through bold/ italic/ underlined, highlighting a text, changing case, using subscript and superscript, using different underline methods
- Aligning of text in a document, justification of document, inserting bullets and numbering
- Formatting paragraph, inserting page breaks and column breaks
- Use of headers, footers: Inserting footnote, end note, use of comments
- Inserting date, time, special symbols, importing graphic images, drawing tools
- Tables and Borders:
Creating a table, formatting cells, use of different border styles, shading in tables, merging of cells, partition of cells, inserting and deleting a row in a table
- Print preview, zoom, page set up, printing options
- Using Find, Replace options
- Using Tools like:
Spell checker, help, use of macros, mail merge, thesaurus word content and statistics, printing envelopes and labels
- Using shapes and drawing toolbar,
- Working with more than one window in MS Word,
- How to change the version of the document from one window OS to another
- Conversion between different text editors, software and MS word

8. MS-EXCEL

Starting excel, open worksheet, enter, edit, data, formulas to calculate values, format data, create chart, printing chart, save worksheet, switching from another spread sheet

Menu commands: Create, format charts, organise, manage data, solving problem by analyzing data, exchange with other applications. Programming with MS-Excel, getting information while working

Work books: Managing workbooks (create, open, close, save), working in work books, selecting the cells, choosing commands, data entry techniques, formula creation and links, controlling calculations, working \ with arrays .

Editing a worksheet, copying, moving cells, pasting, inserting, deletion cells, rows, columns, find and replace text, numbers of cells, formatting worksheet

Creating a chart: Working with chart types, changing data in chart, formatting a chart, use chart to analyze data

Using a list to organize data, sorting and filtering data in list

Retrieve data with MS - query: Create a pivot table, customizing a pivot table. Statistical analysis of data

Customize MS-Excel: How to change view of worksheet, outlining a worksheet, customize workspace, using templates to create default workbooks, protecting work book

Exchange data with other application: linking and embedding, embedding objects, linking to other applications, import, export document.

9. Internet and its Applications

- a) Log-in to internet
- b) Navigation for information seeking on internet
- c) Browsing and down loading of information from internet
- d) Sending and receiving e-mail

Creating a message
Creating an address book
Attaching a file with e-mail message
Receiving a message
Deleting a message

RECOMMENDED BOOKS

1. Fundamentals of Computer by V Rajaraman; Prentice Hall of India Pvt. Ltd., New Delhi
2. Computers Today by SK Basandara, Galgotia publication Pvt ltd. Daryaganj, New Delhi
3. MS-Office 2000 for Everyone by Sanjay Saxena; Vikas Publishing House Pvt. Ltd., New Delhi
4. Internet for Every One by. Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi
5. A First Course in Computer by Sanjay Saxena; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi
6. Mastering Windows 95, BPB Publication, New Delhi
7. Computer Fundamentals by PK Sinha; BPB Publication, New Delhi
8. Fundamentals of Information Technology by Leon and Leon; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi

6. ENGINEERING DRAWING

060035

Time Allotted = 7¹/₂ Hrs/week
Total Contact Hours = 7¹/₂ x 16 = 120

RATIONALE

Drawing is said to be the language of engineers and technicians. Reading and interpreting engineering drawing is their day-to-day responsibility. The course is aimed at developing basic graphic skills so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation

- Note:
1. First angle projection is to be followed
 2. Minimum of 15 sheets to be prepared by each student
 3. SP 46 - 1988 should be followed
 4. Instruction relevant to various drawings may be given along with appropriate demonstration, before assigning drawing practice to the students

DETAILED CONTENTS

1. Drawing Office Practice
 - 1.1 Drawing instruments
 - 1.2 Sizes and layout of standard drawing sheets
 - 1.3 Sizes of drawing boards
 - 1.4 Drafting table/board

2. Different types of Lines and Free Hand sketching (1 sheet)
 - 2.1 Different types of lines in engineering drawing as per BIS specifications
 - 2.2 Practice in free hand sketching of vertical, horizontal and inclined lines, geometrical figures such as triangles, rectangles, small and large circles, parabolas, curves and ellipses

3. Lettering Techniques and Practice (1 sheet)
 - 3.1 Instrumental single stroke (capital and inclined) lettering of 35 mm height in the ratios of 7:4
 - 3.2 Free hand lettering (alphabet and numerals) lower case and upper case, single stroke vertical and inclined at 75 degree in different standard series of 2.5, 3, 5,7, 10, and 15 mm heights in the ratio of 7:4

4. Dimensioning (1 sheet)
 - 4.1 Necessity of dimensioning, terms and notations - methods and principles, Dimensioning small components as in 4.2 below (mainly theoretical instructions)
 - 4.2 Dimensioning of overall sizes, circles, thread holes, chamfered surfaces, Angles, tapered surface holes equally spaced on PCD, counter sunk hole counter bored holes, cylindrical parts, narrow space and gaps, radii, curves and arches - chain and parallel dimensioning

5. Scale (2 sheets)
 - 5.1 Scales - their need and importance, Definition of representative fraction (RF); Find RF of a given scale
 - 5.2 Types of scales (names only)
 - 5.3 Construction of plain and diagonal scales

6. Principle of Projections (strictly in first and third angle projection [elementary knowledge] (3 sheets)
 - 6.1 Principle of orthographic projection
 - 6.2 Drawing 3 orthographic views of given objects (at least four objects)
 - 6.3 Identification of surfaces on drawn orthographic views from isometric object drawn
 - 6.4 Exercises on missing lines, surfaces and views
 - 6.5 Sketching practice of pictorial views from isometric objects

7. Sectional Views (2 sheets)
 - 7.1 Need for sectional views - cutting planes methods of representing sections, Conventional sections of various material,

- classification of sections, conventions in sectioning
 - 7.2 Drawing of full section, half section, partial broken out sections, off-set sections revolved sections and removed sections. Exercises on sectional views of different isometric views
 - 7.3 Drawing of different conventions for materials in section, conventional Breaks for shafts, pipes, rectangular, square, angle, channel, rolled sections
- 8. Detail and Assembly drawing (2 sheets)
 - 1.1 Principle and utility of detail and assembly drawings
 - 1.2 Wooden joints i.e. corner mortice and Tenon joint, Tee halving joint, Miter faced corner joint, Tee bridle joint, Crossed wooden joint, Cogged joint, Dovetail joint, Through Mortice and Tenon joint, Corner and Through halving joint, Closed Mortise and Tenon joint
- 9. Threads (2 sheets)
 - 9.1 Nomenclature of threads, types of threads (metric), single and multiple start threads
 - 9.2 Forms of various external thread sections such as V, square and acme Threads, BA, BSW and Knuckle, Metric, Seller Thread, Buttress Threads
 - 9.3 Simplified conventions of left hand and right hand threads, both external and internal threads
- 10. Nuts and Bolts (2 sheets)

Different views of hexagonal and square nuts; Different views of hexagonal and square nuts; Assembly of hexagonal headed, square headed, square headed with square neck bolts with hexagonal and square nuts and washers. Foundations bolts - Rag bolt and Lewis bolt
- 11. Keys and Cotters (1 sheet)

Various types of keys and cotters and their practical application and preparation of drawing of various keys and" cotters showing keys and cotters in position
- 12. Rivets and Riveted Joints (2 sheets)
 - 12.1 Types of structural and general purpose rivet heads
 - 12.2 Caulking and fullering of riveted joints

- 12.3 Types of riveted joints - lap, butt (single riveted, double riveted lap joint, single cover plate and double cover plate), chain and zig - zag riveting

- 13. Couplings (1 sheet)
 - 13.1 Muff or Box coupling
 - 13.2 Flange coupling (non-protected)

- 14. Symbols and Conventions (1 sheet)
 - 14.1 Civil engineering sanitary fitting symbols
 - 14.2 Electrical fitting and Mechanical symbols for domestic interior installations

- 15. AUTO CAD
 - 15.1 Concept of AutoCAD, Tool bars in AutoCAD, coordinate system, snap, grid and ortho mode
 - 15.2 Drawing commands - point, line, arc, circle, ellipse
 - 15.3 Editing commands - scale, erase, copy, stretch, lengthen and explode
 - 15.4 Dimensioning and placing text in drawing area
 - 15.5 Sectioning and hatching
 - 15.6 Inquiry for different parameters of drawing entity

Note: A minimum of 21 sheets should be prepared by each student

RECOMMENDED BOOKS

1. Elementary Engineering Drawing (in first angle projection) by ND Bhatt, Charotar Publishing House
2. A Text Book of Engineering Drawing by Surjit Singh published by Dhanpat Rai and Co., Delhi
3. Engineering Drawing by PS Gill published by SK Kataria and sons, Delhi

7. GENERAL 'WORKSHOP PRACTICE

Time Allotted = 7¹/₂ Hrs/Week
Total Contact Hours = 7¹/₂ x 16 = 120

RATIONALE

Manual abilities to handle engineering materials with hand tools need to be developed in the students. They will be using different types of tools/equipment in different shops for fabrication purposes. Besides developing the necessary skills, the students will appreciate the importance of quality and safety measures.

DETAILED CONTENT

Note:

1. The students are supposed to come in proper workshop dress prescribed by the institute. Wearing shoes in the workshop(s) is compulsory. Importance of safety and cleanliness, safety measures and upkeep of tools, equipment and environment in each of the following shops should be explained and practiced. The students should prepare sketches of various tools/jobs in their practical Notebook.
2. The students should also be taken to various shops (not included in the curriculum) in the polytechnic in batches and should be given knowledge of the various machines/equipments.

Following four shops are being proposed:

- 1 Carpentry Shop
- 2 Fitting and Plumbing Shop
- 3 Welding Shop
- 4 Electrical and Electronics Shop

1. Carpentry Shop

- 1.1 Introduction to various types of wood, carpentry tools - their identification
With sketches. Different types of wood joints.
- 1.2 Simple operations viz. hand sawing, marking, and planning

- 1.3 Demonstration and use of wood working machines i.e. band saw, circular saw, rip saw, bow saw and trammels. Universal wood working machine and wood turning lathe
- 1.4 Making of various joints (Also draw the sketches of various wooden joints in the Practical Note Book)
 - a) Cross lap joint
 - b) T-lap joint
 - c) Prepare a file handle or any utility items by wood turning lathe

2. Fitting and Plumbing Shop

- 2.1 Introduction to fitting shop, common materials used in fitting shop, description and demonstration of various types of work-holding devices and surface plate, V-block
- 2.2 Demonstration and use of simple operation of hack-sawing, demonstration of various types of blades and their uses
- 2.3 Demonstrate and use of all important fitting shop tools with the help of Neat sketches (files, punch, hammer, scraper, taps and dyes etc.)
- 2.4 Introduction of chipping, demonstration on chipping and its applications. Demonstration and function of chipping tools.
- 2.5 Description, demonstration and practice of simple operation of hack saw, Straight and angular cutting.
- 2.6 Demonstrations, description and use of various types of blades - their uses and method of fitting the blade.
- 2.7 Introduction and use of measuring tools used in fitting shop like: Try Square, Steel rule, Measuring Tape, Outside micrometer, Vernier Caliper and Vernier Height Gauge
- 2.8 Description, demonstration and practice of thread cutting using taps and Dies
- 2.9 Plumbing: Descriptions and drawing of various plumbing shop tools, Safety precautions. Introduction and demonstration of pipe dies, Pipe holding devices, Demonstration and practice of Pipe Fittings such as Sockets, Elbow, Tee, Reducer, Nipple, Union coupling, plug, Bend, Float valves and Taps
 - Job: Cutting and filing practice on a square of 45 X 45 mm² from MS Flat
 - Job: Preparation of stud (to cut external threads) with the help of dies (Mm or BSW)
 - Job: Drilling, counter drilling and internal thread cutting with Taps
 - Job: Pipe cutting practice and thread cutting on GI Pipe with pipe dies

3. Welding Shop

- 3.1 Introduction to welding, type of welding, common materials that can be welded, introduction to gas welding equipment, types of flame, adjustment of flame, applications of gas welding. Welding tools and safety precautions

- 3.2 Introduction to electric arc welding (AC and DC), practice in setting current and voltage for striking proper arc, precautions while using electric arc welding. Applications of arc welding. Introduction to polarity and their use
- 3.3 Introduction to brazing process, filler material and fluxes; applications of Brazing. Use of solder. Introduction of soldering materials
- 3.4 Demonstrate and use of the different tools used in the welding shop with sketches. Hand shield, helmet, clipping hammer, gloves, welding lead, connectors, apron, goggles etc.
- 3.5 Demonstration of welding defects and various types of joints and end preparation
 - Job: Preparation of lap joint by arc welding
 - Job: Preparation of Tee joint by arc welding
 - Job: Preparation of single V or double V butt joint by using Electric arc welding
 - Job: Gas welding practice on worn-out and broken Paris

4. Electrical and Electronics Shop

- 4.1 Demonstration of tools commonly used in Electric Shop
- 4.2 Safety precautions, electric shock treatment
- 4.3 Demonstration of Common Electric material like: wires, fuses, M.C.B., Ceiling roses, battens -and allied items
- 4.4 Demonstration of Voltmeter, Ammeter, Millimeter and Energy meter
 - Job: Wiring practice in batten wiring and plastic casing-capping
 - Job: Wiring practice in batten wiring and plastic casing-capping
 - Job: Control of one lamp by one switch
 - Job: Control of one lamp by two switches
 - Job: Assembly of a Tube light
 - Job: Dismantle, study, find out fault, repair the fault, assemble and test domestic appliances like electric iron, ceiling and table fan
- 4.5 Identification, familiarization, demonstration and use of the following Electronic instruments:
 - a) Multi-meter (digital and analog)
 - b) Single beam simple CRO , function of every knob on the front panel
 - c) Power supply, fixed voltage and variable voltage, single output as well as dual output.

- 4.6 Identification, familiarization and uses of commonly used tools; active and passive components; colour code and types of resistor and potentiometers
- 4.7 Using de-solder pump, remove and clean all the components and wires from a given equipment, a PCB or a tag strip

8. APPLIED SCIENCE (Only for 10+2 Vocational Students)

060047

Time Allotted = 5 Hrs/Week
Total contact Hours = 5 x 16 = 80 Hrs
Theory = 40 + 40 Hrs

DETAILED CONTENTS

PART-A (APPLIED PHYSICS)

RATIONALE

Applied physics includes the study of a large number of diverse topics all related to things that go in the world around us. It aims to give an understanding of this world both by observation and prediction of the way in which objects will behave. Concrete uses of physical principles and Analysis in various fields of engineering and technology are given prominence in the course content.

The role of Chemistry and chemical products in every branch of engineering is expanding greatly. Now a days various products of chemical industries are playing important role in the field of engineering with increasing number of such products each successive years. The strength of materials, the chemical composition of substances, their behaviour when subjected to different treatment and environment, and the laws of heat and dynamic energy have entered in almost every activity of modern life. Chemistry is considered as one of the core subjects for diploma students in engineering and technology for developing in them scientific temper and appreciation of chemical properties of materials, which they have to handle in their professional career. Effort should be made to teach this subject through demonstration and with the active involvement of students.

1. Units and Dimensions

(06 hrs)

- 1.1 Physical quantities
- 1.2 Fundamental and derived units
- 1.3 Systems of units (FPS, CGS, MKS and SI units)
- 1.4 Dimensions and dimensional formulae of physical quantities (area, volume, Velocity, acceleration, momentum, force, impulse, work, power, energy)
- 1.5 Principle of homogeneity
- 1.6 Dimensional equations and their applications, conversion from one unit to another Unit for density, force, pressure, work, power, energy, velocity, acceleration

2. Force and Motion

(10 hrs)

- 2.1 Scalar and vector quantities – examples, addition and multiplication (scalar Product and vector product) of vectors

- 2.2 Force, resolution and composition of forces – resultant, triangle law and parallelogram law of forces
- 2.3 Newton’s Laws of motion – concept of momentum, Newton’s laws of motion and Their applications, determination of force equation from Newton’s second law of Motion; Newton’s third law of motion conversion of momentum, impulse and Impulsive forces, simple numerical problems based on third law.
- 2.4 Circular motion
- 2.5 Relation between linear and angular velocity and linear acceleration and angular Acceleration
- 2.6 Centripetal force (derivation) and centrifugal force

3. Work, Power and Energy (7 hrs)

- 3.1 Work: definitions and its SI units
- 3.2 Work done in moving an object on horizontal and inclined plane (Incorporating Frictional forces)
- 3.3 Power: definitions and its SI units, calculation of power in simple cases
- 3.4 Energy: Definitions and its SI units: Types: Kinetic energy and Potential energy, with examples and their derivation
- 3.5 Principle of conservation of mechanical energy (for freely falling bodies), Transformation of energy from one form to another

4. Properties of Matter (8 hrs)

- 4.1 Pressure – its units, gauge pressure, absolute pressure, atmospheric pressure, Manometers and barometer gauges
- 4.2 Surface tension – its units, applications of surface tension, effect of temperature and impurity on Surface tension
- 4.3 Definitions of viscosity and coefficient of viscosity; effect of temperature on viscosity

5. Rotational Motion (4 hrs)

- 5.1 Kinetic energy of rotation
- 5.2 Definitions of torque, moment of inertia, angular momentum, radius of gyration
- 5.2 Conservation of angular momentum (qualitative)

6. Electricity (5 hrs)

- 6.1 Ohm’s law
- 6.2 Resistance of a conductor, specific resistance, series and parallel combination of resistors, effect of temperature on resistance
- 6.3 Kirchhoff’s laws
- 6.4 Heating effect of current and concept of electric power electrical energy and their units

PART-B (APPLIED CHEMISTRY)

1. **Language of Chemistry** (9 hrs)
 - 1.1 Definition of symbol, formula, valency and chemical equation.
 - 1.2 Writing of the chemical formula of a simple chemical compound. Calculation of percentage composition of a chemical compound.
 - 1.3 Balancing of a chemical equation by Hit and Trial method.

2. **Water** (8 hrs)
 - 2.1 Hard and soft water, types of hardness and its causes, disadvantages of hardness of water (i) in industrial use (ii) in boilers for steam generation.
 - 2.2 Definition of degree of hardness of water.
 - 2.3 Qualities of water used for drinking purposes.

3. **Electrolysis** (6 hrs)
 - 3.1 Definition of the terms: Electrolytes, Non-electrolytes conductors and non-conductors with suitable examples
 - 3.2 Different industrial applications of 'Electrolysis'

4. **Fuels** (10 hrs)
 - 4.1 Definition of a 'Fuel', characteristics of a good fuel and classification of fuels with suitable examples.
 - 4.2 Definition of Calorific value of a fuel.
 - 4.3 Qualities of a good fuel and merits of gaseous fuels over those of other varieties of fuels.
 - 4.4 Manufacture, composition, properties and uses of (i) Water gas (ii) Oil gas

5. **Lubricants** (7 hrs)
 - 5.1 Definition of (i) lubricant (ii) lubrication
 - 5.2 Classification of lubricants
 - 5.3 Characteristics of a lubricant such as viscosity, viscosity index, emulsification, flash point, fire point and pour point.

RECOMMENDED BOOKS

PHYSICS

1. Applied Physics Vol. I, TTTI Publication Tata McGraw Hill, Delhi

2. Basic Applied Physics by RK Gaur; Dhanpat Rai Publications
3. Comprehensive Practical Physics - Volume I and II by JN Jaiswal; Laxmi Publishers
4. Numerical Problems in Physics - Volume I and II by RS Bharaj; Tata McGraw Hill
5. Simple Course in Electricity and Magnetism by CL Arora; S Chand and Co, New Delhi
6. Fundamental Physics - Volume I and II by Gomber and Gogia; Pardeep Publications, Jalandhar
7. A Text Book of Optics by Subramanian and Brij Lal
8. Physics Laboratory Manual by PK Palanisamy, Scitech Publications
9. Fundamentals of Physics by Resnick and Halliday, Asian Books Pvt. Ltd., New Delhi
10. Concepts in Physics by HC Verma; Bharti Bhawan Ltd., New Delhi

CHEMISTRY

1. Chemistry in Engineering by J.C. Kuriacose and J. Rajaram; Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. Engineering Chemistry by Dr. S. Rabindra and Prof. B.K. Mishra ; Kumar and Kumar Publishers (P) Ltd. Bangalore-40.
3. “A Text Book of Applied Chemistry-I” by SS Kumar; Tata McGraw Hill, Delhi.
4. “A Text Book of Applied Chemistry-I” by Sharma and Others; Technical Bureau of India, Jalandhar
5. Engineering Chemistry by Jain PC and Jain M.
6. Chemistry of Engineering by Aggarwal CV.
7. Chemistry for Environmental Engineers by Swayer and McCarty, McGraw Hill, Delhi.
8. Progressive Applied Chemistry –I and II by Dr. G.H. Hugar; Eagle Prakashan, Jalandhar.

9. TEXTILE DESIGN/PROCESSING/TECHNOLOGY

TEXTILE RAW MATERIAL AND INTRODUCTION TO TEXTILE PROCESSES (LEET)

060038

L T P
3 4

Rationale

The student of diploma in textile branches are supposed to have knowledge of basic fabric structure designs. Thus in this subject students learn different fibres, yarns and fabrics and their processes.

Detailed contents

Theory	Practical exercises
1. Definitions of fibre, yarn, fabric, weaving, moisture content, and moisture regain absolute humidity and relative humidity. Classification of textile fibers.	1. Physical and chemical identification of different types of fibers: - Cotton, Wool, Silk, Nylon, Polyester, Viscose rayon and Acrylic
2. Properties and uses of different types of textile fibers such as:- Cotton, Wool, Silk, Nylon, Polyester, Viscose rayon and Acrylic.	
3. Introduction to mixing and blending. Objects of opening and cleaning, carding, drawing, speed frame and ring frame	3.1 Understanding of different spinning processes by textile mill visit/workshops
4. Introduction to mixing and blending. Objects of opening and cleaning, carding, drawing, speed frame and ring frame	4.1 Understanding the different manufacturing in workshop labs / by mill visit
5. Introduction to different wet Processes such as:- Scouring, Bleaching, Mercerization, dyeing, printing, Mercerization, dyeing, printing and finishing.	5.1 Understanding the wet processes in labs/by mill visit

BASICS OF FABRIC STRUCTURE (LEET)

060039

**L T P
3 - 4**

Rationale

The student of diploma in textile branches are supposed to have knowledge of basic fabric structure designs. Thus in this subject students learn different basic fabric structure designs.

Detailed contents

Theory	Practical Exercises
1. Definitions of warp, weft, ends, picks, repeat of design. Construction of plain weave and its derivative such as:- matt, hopsacks and rib structures. Introduction to draft, lifting plan and denting. Characteristics of plain weave.	1.1 Construction of designs of weave on graph paper.
2. Construction of twill and satin and sateen weaves, Characteristics and uses of twills and satin and sateen weaves. Derivatives of twill such as:-pointed twill, broken twill, combined twill only.	2.1 Construction of designs of twills and satin and sateen on graph paper.
3. Constructions of the following weaves:- Diamond, simple Honeycomb, Brighten Honeycomb, huckaback and mock leno.	3.1 Construction of the designs on graph paper.

INDIAN TRADITIONAL TEXTILE DESIGN

032547

Diploma holders of textile design are supposed to know the historical backgrounds of Indian traditional textiles i.e. woven, printed and embroidered and their development of design, fabric uses and technical details. In practical students learn to prepare motifs of all the traditional textiles mentioned in the curriculum.

DETAILED CONTENTS

Theory	Practical
1.Study of Indian embroidered textile with reference to <ul style="list-style-type: none">- Historical Significance- Construction techniques- styles- Textures,colour and motifs- Centers of production a) Different Kashmir Embroidery b) Punjabi Phulkari c) Chamba Rumal d) Suzni Kantha of Bengal and Bihar e) Chikankari of UP	1.1 Preparations of motifs of each traditional
2.Study of woven Textile with reference to <ul style="list-style-type: none">- Historical Significance- Construction techniques- Styles,Colour and motifs- Centres of production a) Brocades, Banaras brocades	2.1 Preparation of motifs
3.Study of printed textiles with reference to	3.1 Preparations of motifs of each traditional textile mentioned in theory

<ul style="list-style-type: none"> - Historical Significance - Printing techniques - Styles, Colour and motifs - Centres of production a) Block printing of Rajasthan & Gujarat b) Madhubani 	
<p>4. Study of resist dyed textiles with reference to</p> <ul style="list-style-type: none"> - Historical Significance - Dyeing techniques - Styles, Colour and motifs - Centres of production a) Patola b) Ikat c) Bandhani of Rajasthan and Gujrat 	<p>4.1 Preparations of motifs of each traditional textile mentioned in theory</p>

10. Syllabus of Architecture Assistanceship(DET-L)

STUDY AND EVALUATION SCHEME FOR BRIDGE COURSES TO LATERAL ENTRY DIPLOMA PROGRAMMES FOR ARCHICHECTURE FOR PCM(10+2) BACKROUND

Sr. No.	Identity	Subject	Total Contact Hours		EVALUATION SCHEME						Total Marks
					Internal Assessment		External Assessment (Examination)				
					Theory	Practical	Written Paper		Practical		
					Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.	
			Theory	Practical							
1.	090231-LE	Fundamentals of Building Material	48	-	50	-	100	3	-	-	150
2.	090232-LE	Basics of Architectural Drg	48	-	50	-	100	3	-	-	150
3.	090241-LE	Basics of Architectural Design	48	-	50	-	100	3	-	-	150

* ID's to be studied in 3rd semester- 090231-LE, 090232-LE

* ID's to be studied in 4th semester- 090241-LE

Fundamentals of Building Materials

ID 090231-LE

Time Allotted = 3 Hrs/Week
Total contact Hours = 3 x 16 = 48 Hrs
Theory = 48 Hrs

1. Building Stones & Bricks. (6hrs)

Utility of stones

Classification of works

Characteristics of good building stones

Prevailing market rates and sizes

Classification of bricks – properties and third class and over burnt bricks

Characteristics of good brick

Size and weight of a standard brick and commonly available brick

Composition of brick earth

Birth Tiles

2. Lime & Cement (2hrs)

Uses of lime requirements with respect to its use as mortar since ancient times ,

Classification of lime.

Uses of cement

Types of cement, their properties and uses

3. Aggregate, Mortar & Concrete (Types & Uses) (6hrs)

Course Aggregates

Fine Aggregates

Different types of sand and Mortar

Functions of mortar

Water-Cement Ratio

Properties of RCC

4. Timber & Plastics (6hrs)

Characteristics and uses of common Indian Timber

Defects of timber

Characteristics of good timber

Plastics used as materials in building ,industry e.g. flooring, wall paneling, pipes doors etc

5. Glass (4hrs)

- 5.1 Wired glass
- 5.2 Obscured glass

Tinted glass

Glass bricks usage in partition walls and roofing's

Structural glazing

Painted glass

6. Floor and wall finishers (4hrs)

- 6.1 Terrazzo Tiles and Flooring

- 6.2 Marble stone, Kota stone, slate, red sand stone, granite – their tiles and slabs

Parquet (Wooden)

Laminated fiber Boards types

Wall Papers

Cork sheets and tiles

7. Ceiling Materials & Roofing Materials (4 hrs)

- 7.1 Plywood

- 7.2 Cellaret

- 7.3 Figer board

- 7.4 Asbestos tiles

- 7.5 G.I Sheets

- 7.6 Mangalore tiles

- 7.7 PVC sheet (corrugated)

8. Kitchen, Toilet and Building futures / fasting (6 hrs)

- 8.1 Kitchens sinks related accessories their types and brands along with sizes

- 8.2 Sanitary fittings e.g. w.c/ cisterns/ urinal swash basins (their sizes and brands market survey of various materials and collection of data with reference to their properties, sizes, costs, design etc.

- 8.3 Tower Bolts

- 8.4 Door handles

- 8.5 Latches

- 8.6 Wire gauze

- 8.7 Magnetic cupboard closers

9. Additives ,Admixtures and Adhere saves (4 hrs)

Water repellants and water proofing agents

Accelerators

Fly ash

Synthetic resins (Their trade names uses and cost) (application in various situations as compared to traditional material and methods)

10. Paints (6 hrs)

Distempers

Oil Based paints and emulsions

Famishes

Spirit polish ,war polish

Lacquers

Tinctured paint finishes

Basics of Architectural Drawing

ID O90232- LE

Time Allotted = 3 Hrs/Week
Total contact Hours = 3 x 16 = 48 Hrs
Theory = 48 Hrs

1. Introduction to the studio Environment

- (a) Basics of drafting board, instrument , starting off
- (b) Basics of stationery (pencils, sharpening, types of sheets, erasers, cutter etc)
- (c) Demonstrating by the teacher on holding pencils, fining patrolled bar and handling other tools and equipments used in Arch Drawing

2. Line work (3sheet)

Basic of ling work with daft intensities H, HB, 2B, 4B, 6B.

- (a) Hinsonton lines
- (b) Vertical lines
- (c) Diagonal lings
(Using daft grades of pencils to undertow the tonal variations)

3. Lettering & Scale (2 sheet)

- (a) Different styles, heights
- (b) Different intensities
- (c) Introduction to scale (Use of modular scale-both metric system and FPS.

4. Geometric shapes and orthographic projection (3 sheet)

- (a) Simple geometric (cubed , cylinder, comes etc)
- (b) Projection of lines
- (c) Projection of solids

5. Section of solids &Development of surfaces (2 sheet)

- (a) Simple geometric shapes (E.G. Code) Highlighting line integrities for sectional and elevation component (Ensample: parapet, chilies in section and elevation behind)
- (b) Development with an aim to calculate areas if required

6. Isometric Views (2 sheet)

Comers ion of 2D geometrical shapes into 3D isometric views (30-30) to realize the potential of each from simple to complex solid to basic bldg forms.

7. Anemometric views (2 sheet)

Conversion of 2D geometrical shapes into 3D axonometric views at deflt angles (45° - 45° , 30° - 60°) to realize the potential of each form simple to complex solid to basic bldg forms.

Basics of Architectural Design

ID 090241 – LE

Time Allotted = 3 Hrs/Week
Total contact Hours = 3 x 16 = 48 Hrs
Theory = 48 Hrs

1. Primary Elements of Design (7 hrs)

- 1.1 Point
- 1.2 Line
- 1.3 Figure
- 1.4 Plane
- 1.5 Volume

2. Design Elements Principles of Design (8 hrs)

- 2.2 Form
- 2.3 Space
- 2.4 Colour
- 2.5 Harmony
- 2.6 Balance
- 2.7 Rhythm
- 2.8 Texture
- 2.9 Contrast
- 2.10 Monotony
- 2.11 Unity
- 2.12 Scale
- 2.13 Proportion

3. Relationship of form and functions (8 hrs)

4. Colours (8 hrs)

- 4.1 Colour chart showing primary, secondary and tertiary colours
- 4.2 Warm and cool colours
- 4.3 Receding and advancing colours
- 4.4 Psychological effects of colours
- 4.5 Effects of colours on building (interior and exterior)

5. Brick work (5hrs)

- 5.1 Study of standard brick and its dimension

5.2 Specially formed bricks

5.3 Brick work in foundation

5.4 Brickwork in super structure (Different Bonds)

6. Stone work (3hrs)

6.1 Various types of stones used for masonry work.

6.2 Classification of store masonry

7. DPC (3hrs)

7.1 Sources Treatment of dampness and flats of dampness

7.2 Opening in walls

7.3 Classification of Arches and lintels

8. Joinery (3hrs)

8.1 Doors and windows frames their finery

9. Flooring (3hrs)

9.1 Types of flooring and constituents

9.2 Driftnet types of floor finishes

11. Syllabus & Evaluation scheme for MLT (DET-L)

STUDY AND EVALUATION SCHEME FOR BRIDGE COURSES TO LATERAL ENTRY DIPLOMA PROGRAMMES FOR MLT FOR PCM (10+2) BACKGROUND

Sr. No.	Identity	Subject	Total Contact Hours		EVALUATION SCHEME						Total Marks
					Internal Assessment		External Assessment (Examination)				
			Theory	Practical	Written Paper		Practical				
			Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.			
1.	091931-LE	Intoduction to MLT - I	48	-	50	-	100	3	-	-	150
3.	091941-LE	Introduction to MLT - II	48	-	50	-	100	3	-	-	150

- ID's to be studied in 3rd semester - 091931-LE
- ID's to be studied in 4th semester - 091941-LE

Introduction to MLT-I (In 3rd Sem for DET (L))

091931-LE

Time Allotted = 3 Hrs/Week
Total contact Hours = 3 x 16 = 48 Hrs
Theory = 48 Hrs

1. Definition of anatomy & Physiology
2. Organs of digestion, histology of Liver
3. Vitamins
4. Organs of respiration, Histology of lungs
5. Definition of respiration & mechanism
6. Basal metabolic rate
7. Functions of kidney, formation of urine & its composition
8. Definition of Microbiology
9. Anatomy of bacterial cell
10. Classification of microorganisms with special reference to bacteria
11. Definition of sterilization, dry heat, moist heat, structure & function of autoclave
12. Definition & use of antiseptics & disinfectants
13. Care, working and maintenance of simple & compound microscope
14. Culture media-liquid & solid
15. Aerobic & anaerobic culture, isolation of pure cultures
16. Morphological identification of bacteria by microscopic examination & colony characteristics
17. Principle & working of differential cell counter
18. Composition & function of blood

19. Definition & various types of anticoagulants, merits & demerits of each.
20. Various equipment & technique used for collection of blood sample
21. Safety measures at the time of sampling & collection
22. Differential leukocyte counting & TLC
23. Introduction to biochemistry & analytical equipments

Introduction to MLT-II(In 4th Sem DET(L)

091941-LE

Time Allotted = 3 Hrs/Week
Total contact Hours = 3 x 16 = 48 Hrs
Theory = 48 Hrs

1. Chambers of heart, various vessels & valves present in heart
2. Arteries & Veins
3. Blood Pressure
4. Brain & Spinal Cord
5. Important bones & their brief description
6. Short description of Thyroid gland, its secretion & its effect on the body.
7. Male & Female reproductive system, Fertilization
8. Bacteriological examination of water, milk & food
9. Staining & lab diagnosis of staphylococci, corynebacterium diphtheria, pseudomonas, clostridium, mycobacterium tuberculosis
10. Sources & mode of spread of infection
11. Lab. Diagnosis of urinary tract infection, gastrointestinal infection
12. Methods of counting RBC, WBC & Platelets
13. Principle & methods of estimation of Blood Glucose & GTT
14. Reference value & clinical importance of blood glucose & GTT
15. Definition of Plasma & serum Proteins
16. Different methods of estimation of Plasma Protein
17. Reference value & clinical importance of serum cholesterol

- 18.** Functions of electrolytes (Na⁺, K⁺, Cl⁻, Ca⁺², PO₄²⁻)
- 19.** Definition of Biopsy, Autopsy, Putrefaction
- 20.** Various types of fixatives, their advantages & disadvantages
- 21.** Working principle, care & maintenance of microtome
- 22.** Various steps of staining
- 23.** Types (aqueous, resinous) of Mountants & their applications

12. Syllabus of Fashion Design / Fashion Technology

STUDY AND EVALUATION SCHEME FOR BRIDGE COURSES TO LATERAL ENTRY DIPLOMA PROGRAMMES FOR FASHION DESIGN AND FASHION TECHNOLOGY FOR PCM (10+2) BACKGROUND

Sr. No.	Identity	Subject	Total Contact Hours		EVALUATION SCHEME						Total Marks
					Internal Assessment		External Assessment (Examination)				
			Theory	Practical	Written Paper		Practical				
			Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.			
1.	092931-LE	Basics of Pattern Making	24	40	25	25	100	3	50	3	200
2.	092932-LE	Basics of Garment Construction	-	32	-	50	-	-	100	3	150
3.	092941-LE	Fundamentals of Textile Science	48	-	50	-	100	3	-	-	150
4.	092942-LE	Basics of Fashion Illustration	-	48	-	50	-	-	100	3	150

- ID's to be studied in 3rd semester - 092931-LE, 092932-LE,
- ID's to be studied in 4th semester - 092941-LE, 092942-LE

1. Different Methods of taking measurements

Introduction to standard measurements, standards measurement charts,
Methods of taking measurements (direct, indirect, landmarks)
Classification of measurements – circumference, horizontal and
Vertical measurements

2. Methods of development pattern

- flat pattern
- Draping

3. Drafting equipments its uses

Pins and pin holders, scissors, measuring tapes, French curves, scales,
Curve scales, notched, tracing wheel, pattern papers, markers etc.

4. Introduction to style interpretation

What is style interpretation? How it is done? What are its benefits?

5. Drafting of:

- Child's panty
- Bloomer
- Child's bodice block and sleeve block
- Child's skirt block

6. Drafting of individual measurements

Pattern drafting, flat pattern making, basic pattern set, templates, working pattern, production pattern, design specification sheet, pattern chart, cost sheet, grain, warp, weft, selvedge, bias, true bias, apex, dart, dart legs, dart intake, tracing and blending, plumb line,

vertical, horizontal and perpendicular lines, symmetrical and asymmetrical lines, style no., pattern size, pivotal point, pattern manipulation

7. Layouts

Planning layouts for various widths and special fabric (e.g. plaids, piles and unidirectional fabrics)

Practical

40 Hrs

1. Taking measurements directly from body
2. Locating land marks and taking anthropometrics measurements
3. Taking measurements from the garments
4. Practice on use of:- Squares and scales, French curve – for arm hole, necklines etc.
- 5 Drafting of : Child's panty, Bloomer
6. Style interpretation of any given design
7. Adaptation of child's bodice to : Yokes, Bodice lengths
8. Adaptation of basic sleeve to:
 - Puff sleeve
 - Cap sleeve
 - Magyar sleeve
 - Balloon sleeve
9. Drafting and adaptation of various collars
 - Baby collar
 - Peter pan collar – flat and raised
 - Convertible collar
10. Child's bodice block and sleeve block- Child's skirt block

Basics of Garment Construction

ID 092932 – LE

Time Allotted = 2 Hrs/Week

Total contact Hours = 2 x 16 = 32 Hrs

- 1) Defects and remedies of a sewing machine: Machine control exercises on speed control, Paper exercises, and Fabric exercises.
- 2) Classification of seams: - Flat, raised, decorative: Practice on various samples of machine seam – plain, run and fell, French, lapped seam, counter seam, mantira makers, counter hem, top seam, slot seam, beading.
- 3) Preparation of various pleats and gather
- 4) Preparation of darts, tucks
- 5) Edge finishing of garments: Practice on variations of garments edge finishing by hemming, piping and edge binding
- 6) Types of plackets: Preparation of various types of plackets
- 7) Preparation of various Necklines (round, square)
- 8) Preparation of various types of Pockets (patch, bello)
- 9) Preparation of various types of sleeves (plain, cap)
- 10) Practice of attachment of zipper (concealed open ended, lapped)

1. Introduction to textile fibre, yarn and fabric - Important properties of fibres: cotton, wool silk, polyester, spandex, viscose rayon
2. Relevance of Thread count; linear density, balance yarn slippage to fabric performance.
3. Yarn Processing - Sequence of spinning operation for making spun
4. Type of yarns and their properties relevant to fabric behavior - Simple yarns: single, ply, cord - Novelty yarns: slub, boucle, Chenille, nubs, Corkscrew, grendelle - Textured yarns: stretch yarns, bulk yarns, core-spun yarns - Blended Yarns - Yarn twist, yarn count/size.
5. Fabric structure and properties relevant to consumer requirements such as: a) Weaving – Fundamentals
6. Woven: - Type of looms – pit looms, loins loom, table loom, dobby and jacquard, shuttle less - Accessories – shuttle, reed, healed, batten - Basic weaves – plain, twill, satin - Decorative weaves, swirled, lappet, spot, dobby, jacquard, pile - Weaving defects.
7. Knits: - Type of stitches used (Purl, Jersey, Miss, Tuck), Weft knits: Plain, Purl, Rib, Velour, Terry, Pile. Warp Knits: Tricot, Milanese, Lascael
8. Finishes: Importance of finish: definition and objectives.
9. Understanding role of labels/textile markings textile consumer
10. Dyeing – Definition and stages of dyeing
11. Printing- definition and type of printing techniques
12. Defects in Fabrics - Dyeing defects - Print defects

1. Concept of fashion drawings

2. Knowledge of Drawing Equipment and Tools

- Paper
- Markers and Pencils
- Drawing Board
- Ruler
- Tape
- Erasers
- Knives
- Different media (charcoal, ink, Water Colour etc)
- Outdoor sketching – Central market, Park, Railway Station and Museum

3. Fashion figure (difference between normal and fashion figures)

4. drawing the eight Head figure/Stick figures/Block figures

5. Muscle view
6. Front view ½ sheet each
7. Structure of legs
8. Structure of hands
9. Drawing the foot
10. Facial proportion
11. Drawing the face, step by step.
12. Profile head step by step: Three-dimensional head 2 Nos.
13. Drawing of hair step by step

14. Drawing from A live model

15. Different color media

16. Coloring of the various dresses using appropriate colour media e.g. using water- colour to depict silk, woolen, jute, hosiery, net, sheer fabrics. The material should be identified (4 sheet of ¼ sheet)