

SYLLABUS

DIPLOMA

(COMPUTER SCIENCE & ENGINEERING)

(2024-2027)



Vision

To develop the Department of Computer Science & Information Technology as a Center for Excellence to produce leading Professionals who can serve the society with innovative skills, Computer Experts, Researchers to meet the needs of the software industry in national /global scenario responding to the challenges of ever changing world.

Mission

We endeavor to provide the best possible learning environment to enhance innovations, research capabilities, problem solving skills, leadership qualities, team spirit and ethical responsibilities.

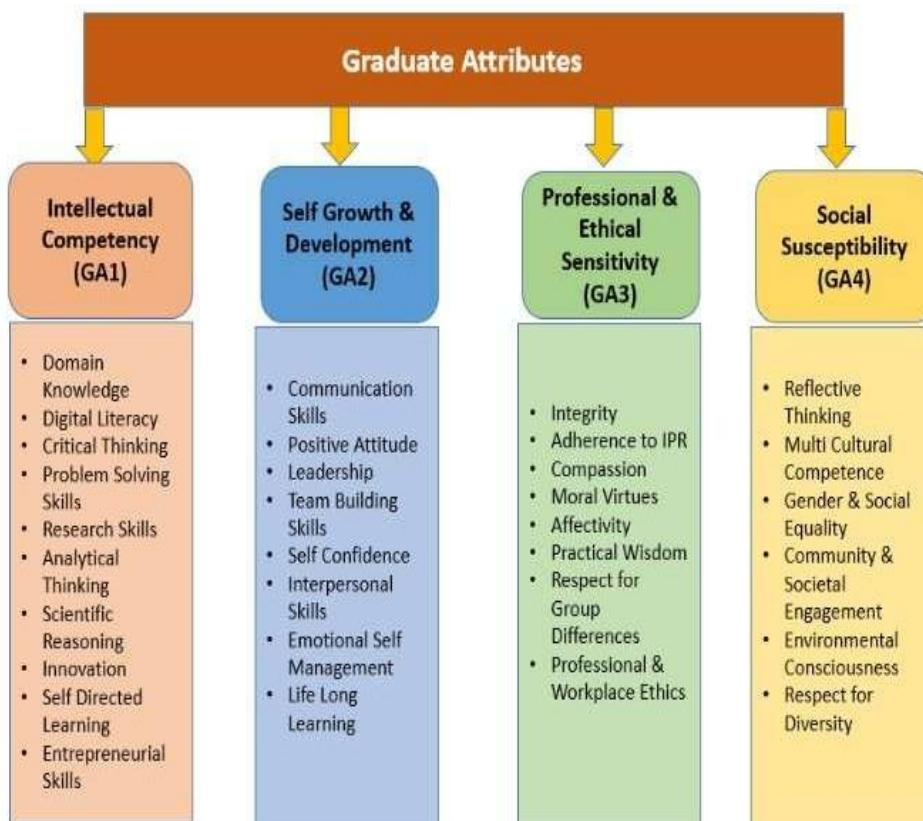
To nurture the talent of the students to be successful, ethical and effective problem solvers who will contribute positively to the economic growth of the nation and prepare to respond to the challenges.

Graduate Attributes

Jharkhand Rai University is a mecca of transformative education which strongly believes in the holistic development of students. The university provides the cutting-edge of holistic learning to develop promising youngsters into leaders of tomorrow with globally relevant, future-ready and actionable intelligence. The objective of the Department is to make each student proficient in synthesizing/analysing information and be ethical, socially responsible, and just when making decisions. JRU ensures inclusive and equitable quality education and promote lifelong learning opportunities for all.

Every graduate of the Department will be developed to possess the following attributes:

1. Intellectual Competency
2. Self-Growth & Development
3. Professional & Ethical Sensitivity
4. Social Susceptibility





BATCH 2024-2027													
DIPLOMA IN COMPUTER SCIENCE & ENGINEERING													
SEMESTER I													
S. No	Subject Code	Category	Name of Subject	Evaluation Scheme				Subject Total	Periods			Credit	Hours
				Assignment	TA	Total	ESE		L	T	P		
1	3DBS C101	Basic Science Course	Basic Mathematics I	20	10	30	70	100	3	0	0	3	3
2	3DBS C102	Basic Science Course	Basic Chemistry	20	10	30	70	100	3	0	0	3	3
3	3DBS C103	Basic Science Course	Basic Physics I	20	10	30	70	100	3	0	0	3	3
4	3DPC C101	Professional Core Course	Fundamentals of Computer	20	10	30	70	100	3	0	0	3	3
5	3DHS MC101	Humanities and Social Sciences	Life Skills I	20	10	30	70	100	2	0	0	2	2
PRACTICAL/DESIGN/DRAWING/SESSIONAL													
1	3DBS C102 P	Basic Science Course	Basic Chemistry Lab		30	30	20	50	0	0	2	1	2
2	3DBS C103 P	Basic Science Course	Basic Physics I Lab		30	30	20	50	0	0	2	1	2
3	3DPC C101 P	Professional Core Course	Fundamentals of Computer Lab		30	30	20	50	0	0	2	1	2
4	3DES C101 P	Engineering Science Course	Basic Engineering Graphics Lab		30	30	20	50	0	0	2	1	2
5	3DPC C102 P	Professional Core Course	Computer Assembly and Repair I Lab		30	30	20	50	0	0	4	2	4
							TOTAL	750				20	26

DIPLOMA IN COMPUTER SCIENCE & ENGINEERING													
SEMESTER II													
S. No	Subject Code	Category	Name of Subject	Evaluation Scheme				Subject Total	Periods			Credits	Hours
				Assignment	TA	Total	ESE		L	T	P		
1	3DB SC104	Basic Science Course	Basic Physics II	20	10	30	70	100	3	0	0	3	3
2	3DB SC105	Basic Science Course	Basic Mathematics II	20	10	30	70	100	3	0	0	3	3
3	3DP CC103	Professional Core Course	Programming in C	20	10	30	70	100	3	0	0	3	3
4	3DE SC102	Engineering Science Course	Basic Electrical & Electronics Engineering	20	10	30	70	100	3	0	0	3	3
5	3DM C101	Mandatory Course	Environmental Studies	20	10	30	70	100	3	0	0	3	3
6	3DH SMC102	Humanities and Social Sciences	Life Skills II	20	10	30	70	100	2	0	0	2	2
PRACTICAL/DESIGN/DRAWING/SESSIONAL													
1	3DB SC104P	Basic Science Course	Basic Physics II Lab		30	30	20	50	0	0	2	1	2
2	3DP CC103P	Professional Core Course	Programming in C Lab		30	30	20	50	0	0	2	1	2
3	3DE SC102P	Engineering Science Course	Basic Electrical & Electronics Engineering Lab		30	30	20	50	0	0	2	1	2
4	3DP CC104P	Professional Core Course	Computer Assembly and Repair II Lab		30	30	20	50	0	0	2	1	2
							TOTAL	800				21	25

DIPLOMA IN COMPUTER SCIENCE & ENGINEERING													
SEMESTER III													
S. No	Subject Code	Category	Name of Subject	Evaluation Scheme				Subject Total	Periods			Credit	Hours
				Assessment	TA	Total	ESE		L	T	P		
1	3DP CC20 1	Professional Core Course	Object Oriented Programming using C++	20	1 0	3 0	7 0	100	3	0	0	3	3
2	3DP CC20 2	Professional Core Course	Data Structures	20	1 0	3 0	7 0	100	3	0	0	3	3
3	3DP CC20 3	Professional Core Course	Web Technology	20	1 0	3 0	7 0	100	3	0	0	3	3
4	3DH SMC 201	Humanities and Social Sciences	Communication & Soft Skills	20	1 0	3 0	7 0	100	2	0	0	2	3
5	3DM C201	Mandatory Course	** Disaster Management	20	1 0	3 0	7 0	100	3	0	0	0	3
6	3DB SC20 1	Basic Science Course	Applied Mathematics	20	1 0	3 0	7 0	100	3	0	0	3	3
PRACTICAL/DESIGN/DRAWING/SESSIONAL													
1	3DP CC20 1P	Professional Core Course	Object Oriented Programming using C++ Lab		3 0	3 0	2 0	50	0	0	2	1	2
2	3DP CC20 2P	Professional Core Course	Data Structures Lab		3 0	3 0	2 0	50	0	0	2	1	2
3	3DP CC20 3P	Professional Core Course	Web Technology Lab		3 0	3 0	2 0	50	0	0	2	1	2
					TOTAL			750				17	24

DIPLOMA IN COMPUTER SCIENCE & ENGINEERING
SEMESTER IV

S. No	Subject Code	Category	Name of Subject	Evaluation Scheme				Subject Total	Periods			Credits	Hours	
				Assignment	TA	Total	ESE		L	T	P			
1	3DP CC20 4	Professional Core Course	Operating System	20	1 0	3 0	7 0	10 0	3	0	0	3	3	
2	3DP CC20 5	Professional Core Course	Data Communication and Computer Networking	20	1 0	3 0	7 0	10 0	3	0	0	3	3	
3	3DP CC20 6	Professional Core Course	Database Management System	20	1 0	3 0	7 0	10 0	3	0	0	3	3	
4	3DE SC20 7	Engineering Science Course	Electronic Devices and Circuits	20	1 0	3 0	7 0	10 0	3	0	0	3	3	
5	3DP CC20 8	Professional Core Course	Computer Architecture	20	1 0	3 0	7 0	10 0	3	0	0	3	3	
6	3DH SMC 202	Humanities and Social Sciences	Professional Skills	20	1 0	3 0	7 0	10 0	2	0	0	2	2	
PRACTICAL/DESIGN/DRAWING/SESSIONAL														
1	3DP CC20 4P	Professional Core Course	Operating System Lab		3 0	3 0	2 0	50	0	0	2	1	2	
2	3DP CC20 5P	Professional Core Course	Data Communication and Computer Networking Lab		3 0	3 0	2 0	50	0	0	2	1	2	
3	3DP CC20 6P	Professional Core Course	Database Management System Lab		3 0	3 0	2 0	50	0	0	2	1	2	
4	3DE SC20 7P	Engineering Science Course	Electronic Devices and Circuits Lab		3 0	3 0	2 0	50	0	0	2	1	2	
								TOTAL	80				21	25

DIPLOMA IN COMPUTER SCIENCE & ENGINEERING													
SEMESTER V													
S. No	Subject Code	Category	Name of Subject	Evaluation Scheme				Subject Total	Periods			Credit	Hours
				Assignment	TA	Total	SEE		L	T	P		
1	3DPC C301	Professional Core Course	Java Programming	20	10	30	70	100	3	0	0	3	3
2	3DPC C302	Professional Core Course	Computer Graphics	20	10	30	70	100	3	0	0	3	3
3		Departmental Elective	Departmental Elective I	20	10	30	70	100	3	0	0	3	3
4		Departmental Elective	Departmental Elective II	20	10	30	70	100	3	0	0	3	3
5	3DES C303	Engineering Science Course	Microprocessor & Microcontrollers	20	10	30	70	100	3	0	0	3	3
6	3DHS MC301	Humanities and Social Sciences	**Human Values and Ethics	20	10	30	70	100	2	0	0	0	2
PRACTICAL/DESIGN/DRAWING/SESSIONAL													
1	3DPC C301 P	Professional Core Course	Java Programming Lab		30	30	20	50	0	0	2	1	2
2	3DPC C302 P	Professional Core Course	Computer Graphics Lab		30	30	20	50	0	0	2	1	2
3		Departmental Elective	Departmental Elective I Lab		30	30	20	50	0	0	2	1	2
4		Departmental Elective	Departmental Elective II Lab		30	30	20	50	0	0	2	1	2
							TOTAL	800				19	25

DIPLOMA IN COMPUTER SCIENCE & ENGINEERING													
SEMESTER VI													
S. No	Subject Code	Category	Name of Subject	Evaluation Scheme				Subject Total	Periods			Credit	Hours
				Assignment	TA	Total	SE		L	T	P		
1	3DPC C304	Professional Core Course	Network Security	20	10	30	70	100	3	0	0	3	3
2	3DPC C305	Professional Core Course	Software Engineering & Tools	20	10	30	70	100	4	0	0	4	4
3		Departmental Elective	Departmental Elective III	20	10	30	70	100	3	0	0	3	3
4		Open Elective	Open Elective	20	10	30	70	100	3	0	0	3	3
5	3DPR OJ	Project	Project				100	100	0	0	12	6	12
6	3DH SMC 302	Humanities and Social Sciences	#Seminar in Executive Communication	20	10	30	20	50	2	0	0	0	2
PRACTICAL/DESIGN/DRAWING/SESSIONAL													
1	3DPC C304 P	Professional Core Course	Network Security Lab		30	30	20	50	0	0	2	1	2
2	3DPC C305 P	Professional Core Course	Software Engineering & Tools Lab		30	30	20	50	0	0	2	1	2
3		Departmental Elective	Departmental Elective III Lab		30	30	20	50	0	0	2	1	2
							TOTAL	700				22	32

Elective	Course Name	Course Code	L	T	P	C
Departmental Elective I (Select any one in Semester V)	Advanced Web Technology	3DDE301	3	0	2	4
	Mobile Computing	3DDE302	3	0	2	4
	Data Mining	3DDE303	3	0	2	4
Departmental Elective II (Select any one in Semester V)	Python Programming	3DDE304	3	0	2	4
	Advanced Data Structures	3DDE305	3	0	2	4
	Advanced Database Management System	3DDE306	3	0	2	4
Departmental Elective III (Select any one in Semester VI)	Artificial Intelligence	3DDE307	3	0	2	4
	Internet of Things	3DDE308	3	0	2	4
	Advanced Computer Networks	3DDE309	3	0	2	4
Open Elective (Select any one in Semester VI)	Principle of Management		3	0	0	3
	Research Methodology		3	0	0	3
	Law of Information Technology Act		3	0	0	3
	Business Ethics		3	0	0	3

SEMESTER	CREDIT
I	20
II	21
III	17
IV	21
V	19
VI	22
Total	120

#NOTE: Qualifying Non Credit Course & only Viva voce is conducted

**** NOTE: Qualifying Non Credit Course**



SEMESTER – I

BATCH 2024-2027													
DIPLOMA IN COMPUTER SCIENCE & ENGINEERING													
SEMESTER I													
S. No	Subject Code	Category	Name of Subject	Evaluation Scheme				Subject Total	Periods			Credit	Hours
				Assignment	TA	Total	ESE		L	T	P		
1	3DBS C101	Basic Science Course	Basic Mathematics I	20	10	30	70	100	3	0	0	3	3
2	3DBS C102	Basic Science Course	Basic Chemistry	20	10	30	70	100	3	0	0	3	3
3	3DBS C103	Basic Science Course	Basic Physics I	20	10	30	70	100	3	0	0	3	3
4	3DPC C101	Professional Core Course	Fundamentals of Computer	20	10	30	70	100	3	0	0	3	3
5	3DHS MC101	Humanities and Social Sciences	Life Skills I	20	10	30	70	100	2	0	0	2	2
PRACTICAL/DESIGN/DRAWING/SESSIONAL													
1	3DBS C102 P	Basic Science Course	Basic Chemistry Lab		30	30	20	50	0	0	2	1	2
2	3DBS C103 P	Basic Science Course	Basic Physics I Lab		30	30	20	50	0	0	2	1	2
3	3DPC C101 P	Professional Core Course	Fundamentals of Computer Lab		30	30	20	50	0	0	2	1	2
4	3DES C101 P	Engineering Science Course	Basic Engineering Graphics Lab		30	30	20	50	0	0	2	1	2
5	3DPC C102 P	Professional Core Course	Computer Assembly and Repair I Lab		30	30	20	50	0	0	4	2	4
							TOTAL	750				20	26

Program: Diploma CSE
Semester: I
Course: Basic Mathematics I
Course Code: 3DBSC101

L	T	P	C
3	0	0	3

Course Objective:

- To familiarize the student with functions of several variables. This is needed in many branches of engineering.
- To introduce the concepts of improper integrals, Gamma, Beta and Error functions which are needed in engineering applications.
- To acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage.
- Students will simplify and evaluate algebraic expressions.
- Students will form and solve linear equations in one variable.
- Students will form and graph linear equations in two variables.
- Students will solve nonlinear equations using analytic methods.

Unit I

Trigonometry: Compound Angles, Multiple and Sub multiple Angles Inverse Trigonometric function.

Unit II

Differential Calculus: Function, Limit, Derivatives, Differentiation of implicit function, Inverse Trigonometric function and parametric function. Geometrical Meaning of dy/dx , dy/dx as a rate Measure. Integral Calculus: Integration, Integration of product of functions, Method of Substitution, Definite Integration.

Unit III

Set Theory: Sets, Subsets Sets operations, Complement of a set, Difference of two sets, De Morgan's law, Cartesian Product of Sets. Algebra: Determinant, Permutation and Combination.

Unit IV

Vectors: Definition of Vector, Algebra of Vectors (Equality, Addition, Subtraction) Scalar and Vector Product of two and three vectors.

Suggested Reading:

- 1. Basic Mathematics: Neelkant Sapna Publishing House.*
- 2. Basic Mathematics Semester I: Dilip Baburao S.chand & Sons.*

Program: Diploma CSE
Semester: I
Course: Basic Chemistry
Course Code: 3DBSC102

L	T	P	C
3	0	0	3

Course Objective:

- Chemistry is the base of all the scientific and technical courses.
- The knowledge gained on polymer chemistry, thermodynamics, spectroscopy, phase rule and nano materials will provide a strong platform to understand the concepts on these subjects for further learning.
- The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.

Unit I

Atomic structure :Definition of atom, Fundamental particles of atom –their mass charge 'location ,definition of Atomic no, Atomic mass no Isotopes &Isobars,& their distinction with suitable examples, Bohr's theory ;Definition Shape of the orbital &distinction between orbits And orbitals, Hunds Rule ,filling up the orbital's by Aufbau's principle (till Atomic no 30), Definition &types of valence (electrovalence& covalent) Octet rule, Duplet rule .formation of electrovalent &covalent compounds e.g. NaCl, CaCl₂, CO₂ Cl₂, NH₃C₂H₄,N₂, C₂H₂Disticion between Electrovalent & covalent compounds.

Unit II

Electrochemistry : Brief study of redox reaction ,oxidation potential , Electrochemical series for Cation & anion ,Electrolysis of CuSO₄ solution By using carbon electrode , Faraday's first &second law of electrolysis & numerical, electrochemical cell & batteries ,definition types such As primary & secondary cell & their example .construction, working & Application of electrolysis such as electroplating &electro refining, Electrometallurgy & electrotyping

Unit III

Metal & Alloys: Metal, occurrence of Metal, Definition of Metallurgy Mineral, Ore Gangue Flux & Slag, stages of Extraction of metal from Its Ores in detail such as Fe, Al, Cr, Ni. Alloys: definition of alloy, purposes of Making alloy .preparation methods, classification of alloys such as Ferrous & Non Ferrous & their example.

Unit IV

Non Metallic Materials & Plastics : Basic concept of organic Chemistry nomenclature of different functional group & isomerism Definition of Plastic , formation of Plastic by Addition &condensation polymerization .study of Resin , Fillers ,Plasticizers Accelerates, Pigments, & their

example .Engineering Application of Plastic based on their properties. Rubber natural rubber its processing, Drawbacks of Natural Rubber, vulcanization of rubber with chemical reaction .synthetic rubber , definition & distinction between natural &synthetic rubber .Thermal insulating material : definition &characteristics of thermal insulator. Preparation, properties & application of thermocol & glass wool Properties &application of Asbestos cork.

Suggested Reading:

- 1. Engineering Chemistry Jain & Jain Dhanpat Rai and Sons*
- 2. Engineering Chemistry S. S. Dara S. Chand Publication*
- 3. Industrial Chemistry B. K. Sharma Goel Publication*



Program: Diploma CSE
Semester: I
Course: Basic Chemistry Lab
Course Code: 3DBSC102P

L	T	P	C
0	0	2	1

List of Experiments:

1. Study of Indicator (Methyl Orange)
2. Study of Indicator (Phenolphthalein)
3. To Determine The Strength of NaOH Solution(Standard Oxalic Acid Solution Supplied)
4. Preparation of Copper Sulphate Crystal from Its Impure Sample.
5. Salt Analysis. (Wet Test & Dry Test).

Program: Diploma CSE

Semester: I

Course: Basic Physics I

Course Code: 3DBSC103

L	T	P	C
3	0	0	3

Course Objective:

- An ability to apply Knowledge of mathematics, science and engineering.
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to function on multidisciplinary teams.
- An ability to identify, formulate and solve engineering problems.
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Unit I

Physical World and Measurement: Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements, Dimensions of physical quantities, dimensional analysis and its applications.

Unit II

Kinematics & Laws of Motion: Frame of reference. Motion in a straight line: Position-time graph, speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity. Uniformly accelerated motion, velocity-time, position-time graphs, and relations for uniformly accelerated motion (graphical treatment). Relative velocity. Laws of Motion: Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction. Uniform circular motion, Dynamics of uniform circular motion: Centripetal force.

Unit III

Work, Energy and Power: Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power. Potential energy, conservative forces, Non-conservative forces: elementary idea of elastic and inelastic collisions.

Unit IV

Motion of System of Particles, Rigid Body Dynamics, Oscillations & SHM: Centre of mass of a two-particle system, momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of uniform rod. Moment of a force, torque, angular momentum, conservation of angular momentum, Rigid Body Dynamics :Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions; Oscillations & SHM :Periodic motion – period, frequency, displacement as a function

of time. Periodic functions. Simple harmonic motion (S.H.M) and its equation; phase; oscillations of a spring–restoring force and force constant; energy in S.H.M.-kinetic and potential energies; simple pendulum– derivation of expression for its time period; free and forced (damped) oscillations, resonance.

Suggested Reading:

1. *Engineering Physics – R.K. Gaur & S.L.Gupta*
2. *Modern Engineering Physics- A.S.Vasudeva*
3. *Concept of Physics – H.C.Verma*
4. *Waves & Oscillations – Brij Lal & Subramaniam*

Program: Diploma CSE
Semester: I
Course: Basic Physics I Lab
Course Code: 3DBSC103P

L	T	P	C
0	0	2	1

List of Experiments:

1. To measure the thickness of the given glass plate using Screw Gauge.
2. To measure the length and diameter of the given solid cylinder using Vernier calipers.
3. To measure the thickness of the given glass plate using Spherometer.
4. Find the resistance of a given wire using Meter Bridge.
5. To establish the current voltage relationship for a metallic conductor and find its resistance.

Program: Diploma CSE
Semester: I
Course: Fundamentals of Computer
Course Code: 3DPCC101

L	T	P	C
3	0	0	3

Course Objective:

Student will be able to:

- Understand a computer system that has hardware and software components, which controls and makes them useful.
- Understand the operating system as the interface to the computer system & Use the basic function of an operating system.
- Set the parameter required for effective use of hardware combined with and Application software's.
- Compare major OS like Linux and MS- Windows.
- Use file managers, word processors, spreadsheets, presentation software's and Internet

Unit I

Fundamentals of Computer : Introduction ,Type of Computer, Components of PC, Inputs & Output Devices, Computer Languages, Memory of Computer.

Unit II

Introduction to MS Office : MS- Word : Introduction, Starting MS-Word Screen and its Components, Elementary Working with MS-Word, MS- Excel: Introduction, Starting MS-Excel, Basics of Spreadsheet, MS- Excel Screen and its Components, Elementary Working with MS Excel, MS –Power Point: Introduction, Starting MS-PowerPoint, Basics of PowerPoint, MS-PowerPoint Screen and Its Components, Elementary Working with MS-PowerPoint.

Unit III

Introduction to Internet: What is Internet? Computer Communication and Internet, WWW and Web Browsers, Creating own Email Account, Networking and types. **Introduction to HTML and Software:** Introduction to HTML. Working of HTML, Creating and loading HTML pages, tags, Structure of on HTML, Document, Stand Alone Tags, Formatting text, Adding Images, Creating hyper Links, Tables, Cyber security, Computer virus.

Unit IV

Information Technology: Current IT Tools, Social networking, mobile computing, cloud computing, Introduction of IOT and IOE, Computer Application in various fields like Data analysis, database management, artificial intelligence.

Suggested Reading:

1. *Computer Fundamentals by B.Ram, New Age Int.*
2. *Computer Fundamentals by P.K Sinha, Priti Sinha, Publisher Kalyani Publishers, 2nd Edition, 2003.*

Program: Diploma CSE
Semester: I
Course: Computer Fundamentals Lab
Course Code: 3DPCC101P

L	T	P	C
0	0	2	1

List of Experiments:

Exp- 1:

Identification of different part of computer system and peripherals

Exp – 2: Operations on operating system

1. Create a new folder and do the following:
 - a. Make a new folder in it.
 - b. Rename the initial folder.
 - c. Opening a new file.
 - d. Creating document in note pad.
 - e. Move the initial folder.
 - f. Copy the initial folder.
 - g. Delete the initial folder
2. Implement the various well known features of Windows operating system such as Notepad, WordPad, Calculator, System tools etc. enclosed in Start→Programs→Accessories.
3. Implement various display properties by right clicking on the Windows Desktop.
4. Explore the taskbar of Windows.
5. Set the wall paper and screen saver.
6. Set the date /time.

Exp.3 Basic operations on MS Word

1. Create a document and
 - a. Put Bullets and Numbers
 - b. Apply various Font parameters.
 - c. Apply Left, Right, and Centre alignments
 - d. Apply Hyperlinks
 - e. Insert pictures
 - f. Insert ClipArt
 - g. Show the use of Word Art
 - h. Add Borders and shading
 - i. Show the use of Find and Replace.
 - j. Apply header/footers

Exp- 4 Advance operations on MS Word

2. Create any document and show the use of File→Versions.
3. Create any document and show the difference between paste and paste special.
4. Create any document and show the use of Washout/Watermark.
5. Implement the concept of mail merge.
6. Implement the concept of macros.
7. Implement the concept of importing a file/document.
8. Implement the concept of merging the documents.
9. Create a student table and do the following :
 - a. Insert new row and fill data
 - b. Delete any existing row.
 - c. Resize rows and columns.
 - d. Apply merging/ splitting of cells
 - e. Apply sort.
 - f. Apply various arithmetic and logical formulas.
 - g. Apply various arithmetic and logical formulas.
10. Create your resume using General Templates.

Exp- 5 Basic operation on electronic spreadsheet/excel

Computer the division of each and every student of a class.

2. Generation of Electricity Bill
3. Generation of Telephone Bill
4. Generation of Salary statement of an employee
5. Generation of Mark Sheet of a student.
6. To compute mean / median / mode.
7. Generation graph to show the production of goods in a company during the last five years.
8. Compare the cost, overheads and sales figure of a company for last three years through appropriate chart.

Exp – 6 Advance operations on electronic spreadsheet

1. Generation the following worksheet

Roll No.	Marks
2050	67
2051	49
2052	40
2053	74
2054	61
2055	57
2056	45

and do the following:

- a. Create chart of the marks.
 - b. Compute sum of marks using auto sum, auto calculate and sum function.
 - c. Compute average of marks.
 - d. Show pass or fail if marks are above 50 or less than 50
 - e. Put header and footer in the spread sheet.
- Importing and exporting data from other files.

Exp – 7 Power Point Presentation preparation

1. Make a presentation of College Education System using
 - a. Blank Presentation
 - b. From Design Template
 - c. From Auto Content Wizard

Exp – 8 Animation and various effect in Power Point Presentation, exporting and importing contents from word/excel

1. Make a presentation on “Wild Life ” and apply the following:
 - a. Add audio and video effects
 - b. Apply various Color Schemes
 - c. Apply various animation schemes.
 - d. Apply slide show

Exp – 9 Simple program in HTML

1. Create any webpage using following HTML tags:
 - a. Background Colour
 - b. Font (Colour, Size, Face)
 - c. Bold / Italic / Underline
 - d. Big / Small
 - e. H 1, H 2, etc.
 - f. Marquee
 - g. Ordered / Unordered List
 - h. Data list
2. Create Employee Table and apply various operations on it using HTML. Also put Border around the table.
3. Create Internal and External Hyperlinks in a Webpage.
4. Implement the concept of Frames in a Webpage.
5. Insert an image in a Webpage.
6. Design Home page of your Institute
7. Design Web page for tourism spots in your area
8. Prepare your CV and link on the web page
9. Use animation of image in a web page
10. Insert a table and perform table handling in web page

Exp – 10 Basics of Internet, surfing, email account opening and transactions through email account

Connect the Internet; open any website of your choice and save the Web Pages.

2. Search any topic related to your syllabus using any search engine and download the relevant material.
3. Create your E-Mail ID on any free E-Mail Server.
4. Login your E-Mail ID and do the following:
 - a. Read your mail
 - b. Compose a new Mail
 - c. Send the Mail to one person
 - d. Send the same Mail to various persons
 - e. Forward the Mail
 - f. Delete the Mail
 - g. Send file as attachment
5. Surf Internet using Google to find information about your state college.
6. Surf Internet using Google to find Tourism information about your state.
7. Surf Internet using Yahoo to find Hotel around your state

Program: Diploma CSE

Semester: I

Course: Life Skills I

Course Code: 3DHSMC101

L	T	P	C
2	0	0	2

Course Objective:

To impart basic skills of Professional Communication in English through intensive practice to the students, so as to enable them to function confidently & effectively in that Language in the Professional Sphere of their life

- The student must have some basic command of English so that the student must be able to:
 - Write reasonably & grammatically
 - Understand (if not use) at least some 2500 general purpose words of English
 - Use some 2000 (at least 1500) general-purpose words of English to express himself/herself in writing & 1500 such words to talk about day-to-day events & experiences of life.
 - Understand slowly-delivered spoken material in Standard Indian English, and
 - Speak reasonably clearly (if not fluently) on routine matters with his fellow Students, with proper word stress, intonation pattern, accent and perfect articulation

Unit I

Basic Grammar

- Noun, Verb, Adverb, Adjective & Preposition
- Sentence
- Tense: Present ,Past & Future
- Voice
- Narration
- Concord
- English Modals
- Connectives
- Degree of Comparison
- Nominalization

Unit II

Practice Exercise

- Re-Writing Sentences
- Gap Filling
- Common Errors
- Phrases & Idioms
- Homophones (Commonly Confused Words)
- Vocabulary Building
- Word Quiz

Unit III

Written Communication Skills

- Requisites of good sentence writing
- Effective sentence structure
- Sentence Building/ Sentence coherence
- Sentence Emphasis/theme
- Development of a paragraph
- Paragraph structure
- Principles of paragraph Writing
- Paragraph length/ coherence/ Division

Unit IV

Etiquettes & Manners

- Dining etiquettes
- Workplace etiquettes
- Professional Manners
- Social Etiquettes
- Group Behavior
- Tour & Travel Etiquettes

Suggested Readings:

1. *Monippally, Matthukutty. M. 2001. Business Communication Strategies. 11th Reprint. Tata McGraw-Hill. New Delhi*
2. *Swets, Paul. W. 1983. The Art of Talking So That People Will Listen: Getting Through to Family, Friends and Business Associates. Prentice Hall Press. New York*
3. *Lewis, Norman. 1991. Word Power Made Easy. Pocket Books*
4. *Sen, Leena. Communication Skills ; Eastern Economy Edition*
5. *Ghanekar, Dr. Anjali. Essentials of Business Communication Skills ; Everest Publishing House*
6. *David Green. Contemporary English Grammar, Structure & Composition ; MacMillan*
7. *Dictionary; Oxford*
8. *Dictionary ; Longman*

Websites

- www.tatamcgrawhill.com/digital_solutions/monippally
- www.dictionary.cambridge.org
- www.wordsmith.org
- www.edufind.com
- www.english_the_easy_eay.com
- www.englishclub.com
- www.english_grammar_lessons.com
- www.wikipedia.org/wiki/english_grammar

Program: Diploma CSE

Semester: I

Course: Basic Engineering Graphics Lab

Course Code: 3DESC101P

L	T	P	C
0	0	2	1

Course Objective:

- Student's ability to perform basic sketching techniques will improve.
- Students will be able to draw orthographic projections and sections.
- Student's ability to use architectural and engineering scales will increase.
- Students will become familiar with auto cad two dimensional drawings.

Unit I

Drawing Instruments and their uses: Letters and numbers (single stroke vertical), Convention of lines and their applications, Scale (reduced, enlarged & full size) plain scale and diagonal scale, Sheet layout, Introduction to AutoCAD (Basic draw and modify Command), Geometrical constructions.

Unit II

Engineering curves & Loci of Points: To draw an ellipse by: Directrix and focus method, Arcs of circle method, concentric circles method. To draw a parabola by: Directrix and focus method, Rectangle method. To draw a hyperbola by: Directrix and focus method. Passing through given points with reference to asymptotes .Transverse Axis and focus method. To draw involutes of circle & polygon (up to hexagon), To draw a cycloid, epi cycloid, hypocycloid ,To draw Helix & spiral ,Loci of Points :Loci of points with given conditions and examples related to simple mechanisms.

Unit III

Orthographic projections: Introduction to Orthographic projections .Conversion of pictorial view into Orthographic Views (First Angle Projection Method Only).Dimensioning technique as per SP-46. Isometric projection. Isometric scale, Conversion of orthographic views into isometric View/projection (Simple objects), Projection of Straight Lines and Planes. (First Angle Projection Method only)

Unit IV

Lines inclined to one reference plane only and limited to both end sin one quadrant. Projection of simple planes of circular, square, rectangular, rhombus, Pentagonal, and hexagonal, inclined tone reference plane and perpendicular to the other.



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Suggested Reading:

1. *Engineering Drawing N. D. Bhatt Charotar Publishing House*
2. *Engineering Drawing and Graphics+ AutoCAD K. Venugopal New Age Publication*
3. *Engineering Drawing R. K. Dhawan S. Chand Co.*
4. *Engineering Drawing ---K. R. Mohan Engineering Graphics Dhanpat Rai and Publication Co.*
5. *Engineering Drawing -P S Gill.*

Program: Diploma CSE

Semester: I

Course: Computer Assembly and Repair I Lab

Course Code: 3DPCC102P

L	T	P	C
0	0	4	2

Learning Objective

Students get the knowledge to support and maintain computer systems, desktops, and peripherals. This includes installing, diagnosing, repairing, maintaining, and upgrading all hardware and equipment while ensuring optimal workstation performance.

List of Experiments:

1. Basic Blocks of a Digital Computer

Introduction to computers, classification, generations, applications, Power Supply Unit (PSU) : ATX Power Supply, SFX Power Supply, Buses: Data Bus, Address Bus, Control Bus, Expansion Cards-Graphics Card, Sound Card, Network Interface Card (NIC),Storage Controller Card, Interfaces and Ports : USB Ports, HDMI Port, Ethernet Port, Audio Jacks.

2. Hardware Identification

Introduction to Computer Hardware, Central Processing Unit (CPU), Memory (RAM), RAM - (DIMM, SO-DIMM), DDR types (DDR3, DDR4, DDR5),Capacity, speed, latency, Storage Devices-Hard Disk Drives (HDD),Solid State Drives (SSD), NVMe SSDs, Motherboard- (ATX, Micro ATX, Mini-ITX) ,CPU socket, RAM slots, expansion slots, power connectors, supported RAM types, Power Supply Unit (PSU)-factors (ATX, SFX) ,connectors (24-pin, 8-pin CPU, PCIe, SATA),Wattage, efficiency rating (80 Plus Bronze, Silver, Gold).

3. Hardware Removal, Testing, Replacement, and Installation

Introduction to Hardware Maintenance, Importance of Hardware Maintenance: Safety Precautions, Anti-static measures (ESD protection),Proper tool usage ,Safety protocols for working with electrical components, Tools and Equipment-Screwdrivers (Phillips, flathead),Anti-static wrist straps and mats ,Compressed air canisters, Thermal paste ,Diagnostic Tools: Multimeter, POST (Power-On Self-Test) card Software diagnostic tools (e.g., MemTest86, Crystal Disk Info), Preparing for Hardware Removal: Shutting Down and Unplugging, Opening the Case.

4. Operating System & Application Software Installation

Installing macOS-Creating Installation Media, Installing Linux Operating System-Choosing a Distribution, Dual Boot and Virtualization-Dual Boot Setup, Virtual Machines, Application Software Installation-Types of Application Software, Installation Methods: Configuring and Managing Application Software-Initial Configuration, Updating and

Patching, Uninstalling Software, Troubleshooting Installation Issues-Common Problems and Solutions.

5. PC Cleaning & Hardware Troubleshooting

Cleaning Specific Components, Reassembling and Cable Management-Reassembling Components, Cable Management, Introduction to Hardware Troubleshooting-Understanding Common Issues, Basic Troubleshooting Steps, Troubleshooting Specific Components-Power Supply Issues, CPU and Motherboard Issues, RAM Issues, Storage Issues, GPU Issues, Cooling and Overheating Issues, Advanced Troubleshooting Techniques-Using Diagnostic Software, Using Diagnostic Hardware.

6. System Utilities and Virus Removal

Introduction to System Utilities-Definition and Purpose, Types of System Utilities, Disk Management Utilities-Disk Cleanup, Disk Defragmentation, Disk Partitioning, Performance Optimization Utilities- System Monitoring Tools, Startup Management, System Optimization Tools, Backup and Recovery Utilities-Importance of Regular Backups, Backup Tools, System Recovery Tools.

7. User Account Customization

Introduction to User Accounts-Purpose and Importance, Types of User Accounts, Creating and Managing User Accounts-Creating New User Accounts, Managing Existing Accounts, Using Command-Line Tools, Customizing User Profiles-Personal Information and Settings, Customizing the Desktop Environment, Customizing Taskbar and Dock, Configuring User Preferences-Accessibility Settings, Input Methods, Power and Sleep Settings.

8. Windows Update, Software Installation & Device Drivers

Uninstalling Software- Uninstallation Methods, Cleaning Up Residual Files, Introduction to Device Drivers-Role of Device Drivers, Installing Device Drivers-Automatic Driver Installation, Manual Driver Installation, Updating Device Drivers-Checking Driver Versions, Updating Drivers, Troubleshooting Driver Issues.

References:

1. Dan Gookin, Troubleshooting & Maintaining Your PC ALL-IN-ONE, 3rd Edition,2017, John Wiley & Sons.
2. Mike Meyers, Scott Jernigan, Dan Lachance,” CompTIA Fundamentals + Exam Guide (All-in-One), 2nd Edition, 2019, Mc Graw Hill Education.
3. Inside PC Norton
4. Computer Installation and servicing BPB Publication
5. OS Programming Peter Norton
6. Servicing PC and Computers BPB Publication

Web References:

1. https://www.youtube.com/watch?v=ItxwyMR0SnY&list=PLeH4ngtDM7eE-1_mdWuXWyZrI_FMHnyJ0&index=5
2. <https://www.cleverfiles.com/howto/crashed-hard-drive-recovery.html>

SEMESTER – II



BATCH 2024-2027													
DIPLOMA IN COMPUTER SCIENCE & ENGINEERING													
SEMESTER II													
S. No	Subject Code	Category	Name of Subject	Evaluation Scheme			Subject Total	Periods			Credits	Hours	
				Assignment	TA	Total		ES	L	T			P
1	3DB SC104	Basic Science Course	Basic Physics II	20	10	30	70	100	3	0	0	3	3
2	3DB SC105	Basic Science Course	Basic Mathematics II	20	10	30	70	100	3	0	0	3	3
3	3DP CC103	Professional Core Course	Programming in C	20	10	30	70	100	3	0	0	3	3
4	3DE SC102	Engineering Science Course	Basic Electrical & Electronics Engineering	20	10	30	70	100	3	0	0	3	3
5	3DM C101	Mandatory Course	Environmental Studies	20	10	30	70	100	3	0	0	3	3
6	3DH SMC102	Humanities and Social Sciences	Life Skills II	20	10	30	70	100	2	0	0	2	2
PRACTICAL/DESIGN/DRAWING/SESSIONAL													
1	3DB SC104P	Basic Science Course	Basic Physics II Lab		30	30	20	50	0	0	2	1	2
2	3DP CC103P	Professional Core Course	Programming in C Lab		30	30	20	50	0	0	2	1	2
3	3DE SC102P	Engineering Science Course	Basic Electrical & Electronics Engineering Lab		30	30	20	50	0	0	2	1	2
4	3DP CC104P	Professional Core Course	Computer Assembly and Repair II Lab		30	30	20	50	0	0	2	1	2
					TOTAL			800				21	25

Program: Diploma CSE

Semester: II

Course: Basic Physics II

Course Code: 3DBSC104

L	T	P	C
3	0	0	3

Course Objective:

- An ability to apply Knowledge of mathematics, science and engineering.
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to function on multidisciplinary teams.
- An ability to identify, formulate and solve engineering problems.
- The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.

Unit I

Gravitation: Kepler's laws of planetary motion. The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.

Unit II

Properties of Bulk Matter: Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity. Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow. Bernoulli's theorem and its applications.

Unit III

Electrostatics & Magnetism: Electric Charges; Conservation of charge, Coulomb's law-force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution. Electric field, electric field due to a point charge, electric field lines; electric dipole, electric field due to a dipole. Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell. Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; Equi potential surfaces, electrical potential energy of a system of two-point charges and of electric dipole in an electrostatic field. Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with dielectric medium between the plates, energy stored in a capacitor. **Magnetism:** Concept of magnetic field, Biot – Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long straight wire, Force between two parallel current-carrying conductors-definition of ampere, straight and toroidal solenoids. Force on a current-carrying conductor in a uniform magnetic field.

Unit IV

Optics & Dual Nature of Matter and Radiation: Reflection of light, spherical mirrors, mirror formula. Refraction of light, total internal reflection and its applications, optical fibers, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula. Magnification, power of a lens, combination of thin lenses in contact. Refraction and dispersion of light through a prism. Scattering of light – blue color of the sky and reddish appearance of the sun at sunrise and sunset. Dual nature of radiation. Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. Matter waves-wave nature of particles, de Broglie relation. Davisson-Germer experiment.

Suggested Reading:

1. *Engineering Physics – R.K. Gaur & S.L.Gupta*
2. *Modern Engineering Physics- A.S.Vasudeva*
3. *Concept of Physics – H.C.Verma*
4. *Waves & Oscillations – BrijLal&Subramaniam*
5. *A Textbook of Optics – BrijLal&Subramaniam*

Program: Diploma CSE

Semester: II

Course: Basic Physics II Lab

Course Code: 3DBSC104P

L	T	P	C
0	0	2	1

List of Experiments:

- 1 Find the acceleration due to gravity using Simple pendulum.
- 2 To determine the unknown resistance of given wire using Potentiometer.
- 3 Find the acceleration due to gravity using Kater's pendulum.
- 4 Compare the e.m.f of two primary cells using Potentiometer.
- 5 Determine the elastic constants of the material of a wire using Searle's Method.

Program: Diploma CSE
Semester: II
Course: Basic Mathematics II
Course Code: 3DBSC105

L	T	P	C
3	0	0	3

Course Objective:

- Apply the principles of differential calculus to solve a variety of practical problems in engineering and applied science.
- Apply the principles of partial differentiation, directional derivatives and double integral.
- To find the velocity and acceleration of a particle moving along a space curve.

Unit I

Probability and Statistics: Definition, Sample Space, Independent and Mutually Exclusive Events, Conditional Probability. Mean, Median, Mode for grouped and ungrouped frequency distribution. Measures of Dispersion Mean Deviation, Standard Deviation, Variance and coefficient of Variance.

Unit II

Complex Number: Definition of complex number, Cartesian polar and exponential forms of complex number, Algebra of complex Number (Equality, Addition, Subtraction, Multiplication and Division) De Moivre's Theorem(without proof), Example based on De Moivre's theorem, roots of complex numbers, roots of unity.

Unit III

Matrices: Definition of a Matrix, Types of matrices, Algebra of matrices(Equality, Addition, Subtraction, Scalar Multiplication and multiplication), Transpose of matrix, Minor and Cofactor of a matrix, Adjoint and Inverse of a matrix.

Unit IV

Three Dimensional Geometry: Cartesian, Polar and Cylindrical Co-ordinates, Direction Cosines and Direction ratios. Distance between points, Equation of planes, Straight lines, and coplanar lines.

Suggested Reading:

1. *Engineering Mathematics* By H.K.Dass
2. *Basic Mathematics Semester II: Dilip Baburao S.chand& Sons.*

Program: Diploma CSE
Semester: II
Course: Programming in C
Course Code: 3DPCC103

L	T	P	C
3	0	0	3

Course Objective:

The course will enable the students to:

- Understand the fundamentals of C programming
- Learn the basics and syntax of C programming
- Understand the concepts of Array, Structure, Pointer and File concept
- Apply the concepts to solve real world problems
- Program in C programming for a given application.

Unit I

Introduction to Programming (Flow chart/pseudocode, compilation etc.), Variables (including data types), Arithmetic expressions and precedence.

Unit II

Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching, Iteration and loops, Arrays (1-D, 2-D), Character arrays and Strings.

Unit III

Basic Algorithms: Searching, Basic Sorting Algorithms, Finding roots of equations, idea of time complexity.

Function and Recursion: Functions (including using built in libraries), Recursion with example programs such as Quick sort, Ackerman function etc.

Unit IV

Structure and Pointers: Pointers, Structures (including self-referential structures e.g., linked list, notional introduction).

Suggested Reading:

1. E. Balagurusamy – Programming in ANSI C, 3rd Edn. , TMH, New Delhi, 2004
2. Programming with C, B.S.Gottfried (TMH)
3. Y. Kanetkar – Let us C, 4th Edition, BPB Publication, New Delhi; 2002
4. The C Programming Language, B.W. Kernighan, Dennis M.Ritchie, PHI/Pearson Education
5. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press
6. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice

Program: Diploma CSE
Semester: II
Course: Programming in C Lab
Course Code: 3DPCC103P

L	T	P	C
0	0	2	1

Tutorial and Lab:

Tutorial 1: Problem solving using computers: Lab1: Familiarization with programming environment

Tutorial 2: Variable types and type conversions: Lab 2: Simple computational problems using arithmetic expressions

Tutorial 3: Branching and logical expressions: Lab 3: Problems involving if-then-else structures

Tutorial 4: Loops, while and for loops: Lab 4: Iterative problems e.g., sum of series

Tutorial 5: 1D Arrays: searching, sorting: Lab 5: 1D Array manipulation

Tutorial 6: 2D arrays and Strings, memory structure: Lab 6: Matrix problems, String operations

Tutorial 7: Functions, call by value: Lab 7: Simple functions

Tutorial 8: Recursion, structure of recursive calls: Lab 8: Recursive functions

Tutorial 9: Pointers, structures and dynamic memory allocation Lab 9: Pointers and structures

Program: Diploma CSE

Semester: II

Course: Basic Electrical & Electronics Engineering

Course Code: 3DESC102

L	T	P	C
3	0	0	3

Course Objective:

- Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance.
- Ability to perform speed characteristic of different electrical machine.
- To provide knowledge in the basic concepts of Electric Circuits, Electrical machines and Measurement techniques.

Unit I

Electric Current - Ohm's Law - Resistance: Conductor, Insulator, semi-Conductor – Ohm's law – Resistance – Specific Resistance – Conductivity – Temperature coefficient of Resistance – Resistance in series, parallel and series parallel combinations, Calculation of electrical Power and Energy. Conducting Materials : Hardening, Annealing - Low Resistive Materials – requirements – properties and applications of copper and aluminum - Comparison between Copper and Aluminum, High Resistive Materials - properties – applications.

Unit II

Heating Effects of Electrical Current : Mechanical Equivalent of Heat - Heat produced due to flow of current in resistance-applications Magnetic Effects of Electric Current: Lines of force - Field pattern due to long straight current carrying conductor-Field pattern of solenoid and Toroid -Field strength at centre and any point on the axis of a circular current carrying conductor- Field Strength around a straight current carrying conductor- Field strength on the axis of a solenoid-Mechanical force on a current carrying - conductor in magnetic field - Direction of force - Fleming's left hand rule -Force between two parallel current carrying conductors – Ampere - Magnetic circuit- Magnetizing force – permeability -flux - reluctance - Magnetization of Magnetic materials - Cycles of Magnetization -B-H Curves - Hysteresis loop - Hysteresis loss - Steinmetz constant -Comparison of Magnetic circuit with electric circuit - Magnetic materials.- classification –Curie Point – Magnetostriction -Soft & Hard - Magnetic materials

Unit III

Electro Magnetic Induction : Faraday's laws - Dynamically and statically induced E.M.F -Lenz's Law & Fleming's right, hand rule -Self and mutual inductance - Co-efficient of coupling - Inductances in series -Energy stored in a magnetic field - Energy stored per unit volume - Lifting power of magnet Electrostatics : Atom, Ion, positive and Negative charges -Laws of Electrostatics – coulomb - Permittivity -Electrostatic induction -Electrostatic field - lines

of force -Comparison of electrostatic and magnetic lines of force -Strength of electric field- Flux density -Gauss theorem - Electric potential - potential difference –Polarization - Dielectric Loss - Application of Dielectrics – Dielectric strength - dielectric constant - Capacitance - Capacitor - types - Capacitors in series and parallel – color codes of resistors and capacitors as per BIS.

Unit IV

Insulating Materials: Properties -Insulation resistance - factors effecting Insulation resistance - Classification of Insulation materials - properties – applications.

Special Purpose Materials: Protective materials – Thermocouple - Bi-Metals- Soldering- Fuses - Galvanizing and Impregnating. Semi-conductor Devices: Intrinsic and extrinsic semi-conductors, 'P' and 'n' type materials, PN Junction, forward and reverse bias- Zener diode, Zener diode characteristics - formation of PNP and NPN transistors-Transistor configurations- CB, CE - Input and output characteristics of CB,CE - comparison of CB,CE, CC.

Suggested Reading:

1. *Basic Electrical Engineering, Fitzgerald, Hinginbotham*
2. *Basic Electrical Engineering I.J. Nagrath and D.P. Kothari, 2nd Edition, TMH, Delhi.*
3. *Electric circuits- Schaum Series*
4. *Electrical Engineering- Del Toro.*
5. *Basic Electrical Engineering- Mittle.*
6. *Basic Electronics B. Bhasavaraj & H.N Shrivashankar-S.Chand*
7. *Basic Electronics – Arvinda H.S-Vikas Pub.*

Program: Diploma CSE

Semester: II

Course: Basic Electrical & Electronics Engineering Lab

Course Code: 3DESC102P

L	T	P	C
0	0	2	1

List of Experiments:

1. A basic introduction to laboratory instrument with its specification.
2. To determine the Resistance value using Color-code.
3. To determine the equivalent Resistance in Series & Parallel.
4. To determine Characteristics of PN Junction diode.
5. To determine Characteristics of Zener diode.
6. To Study the characteristics of BJT in CB configuration.
7. To Study the characteristics of BJT in CE configuration.
8. To study the process of soldering.

Program: Diploma CSE
Semester: II
Course: Environmental Studies
Course Code: 3DMC101

L	T	P	C
3	0	0	3

Course Objective:

- Students understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
- Students appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.
- Master core concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
- Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.

Unit I

Multidisciplinary nature of environmental studies, Natural Resources

Definition, scope and importance need for public awareness.

Renewable and non-renewable resources:

Natural resources and associated problems.

a) Forest resources: Use and over-exploitation, deforestation, case studies.

Timber extraction, mining, dams and their effects on forest and tribal people.

b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems

c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, Case studies.

f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

Unit II

Ecosystems, Biodiversity and its conservation

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystem:-
 - a. Forest ecosystem
 - b. Grassland ecosystem
 - c. Desert ecosystem
 - d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
- Introduction – Definition: genetic, species and ecosystem diversity.
- Bio geographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation
- Hot-spots of biodiversity.
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Unit III

Environmental Pollution, Social Issues and the Environment

Definition

- Cause, effects and control measures of:-
 - a. Air pollution
 - b. Water pollution
 - c. Soil pollution
 - d. Marine pollution
 - e. Noise pollution
 - f. Thermal pollution
 - g. Nuclear hazards
- Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.

- Pollution case studies.
- Disastermanagement: floods, earthquake, cyclone and landslides.
- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case Studies
- Environmentalethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust Case Studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Public awareness.

Unit IV

Human Population and the Environment, Field work

- Population growth, variation among nations.
- Population explosion – Family Welfare Programme.
- Environment and human health.
- Human Rights.
- Value Education.
- HIV/AIDS.
- Women and Child Welfare.
- Role of Information Technology in Environment and human health.
- Case Studies.
- Visit to a local area to document environmental assets-river/forest/grassland/hill/mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc.

Suggested Reading:

1. G. Kiely – *Environmental Engineering Irwin/ McGraw Hill International Edition, 1997*
2. M. L. Davis and S. J. Masen, *Principles of Environmental Engineering and Science, McGraw Hill International Edition, 2004*

Program: Diploma CSE

Semester: II

Course: Life Skills II

Course Code: 3DHSMC102

L	T	P	C
2	0	0	2

Course Objective:

To impart basic skills of Professional Communication in English through intensive practice to the Students, so as to enable them to function confidently & effectively in that Language in the Professional Sphere of their life.

The student must have some basic command of English so that the Student must be able to:

- At the end of the course the student should become a good communicator not only in the organization but in day today life also. Should know and learn the dynamics of external and internal communication.
- Use some 2000 (at least 1500) general-purpose words of English to express himself/herself in writing & 1500 such words to talk about day-to-day events & experiences of life.
- Understand slowly-delivered spoken material in Standard Indian English, and
- Speak reasonably clearly (if not fluently) on routine matters with his fellow Students, with proper word stress, intonation pattern, accent and perfect articulation.
- Should have command over the language.

WRITING SKILLS

Unit I

Letter Writing

- Business/official Letters
- Letter Writing Skills
- Planning of the Letter
- Letter Writing Process
- Form & Structure
- Essentials of Letter Writing
- Types of Professional Letters: letter of enquiry, letter of placing order, information seeking letter, letter of claim & complaint, information giving letter, letter of acceptance, letter of rejection

Unit II

Professional Writing

- Job Application, introduction, layout & format (specimen)
- D O letter
- Resume & Job Application

- Covering Letter
- Editorial Letter
- Writing Mails & SMS (E-Language)
- Notice, Memo, Circular & Minutes Writing.
- Social Letters (letters to friends/relatives etc.)

STUDY SKILLS

Unit III

Reading Skills

- Newspaper Reading
- Mechanics of Note making
- Note Making Techniques/ Reduction Devices
- Organization Techniques/Method of Sequencing
- Mechanics of Summarizing
- Outlining & Paraphrasing

Unit IV

Referencing Skills

- Referencing Skills
- Method of Referencing
- Using Foot Notes
- Scanning and Skimming Skills
- Finding required Information/Meaning/ Pronunciation

Suggested Readings:

1. *Monippally, Matthukutty. M. 2001. Business Communication Strategies. 11th Reprint. Tata McGraw-Hill. New Delhi*
2. *Swets, Paul. W. 1983. The Art of Talking So That People Will Listen: Getting Through to Family, Friends and Business Associates. Prentice Hall Press. New York*
3. *Lewis, Norman. 1991. Word Power Made Easy. Pocket Books*
4. *Sen, Leena. Communication Skills ; Eastern Economy Edition*
5. *Ghanekar, Dr. Anjali. Essentials of Business Communication Skills ; Everest Publishing House*
6. *David Green. Contemporary English Grammar, Structure & Composition ; MacMillan*
7. *Dictionary; Oxford*
8. *Dictionary ; Longman*

Websites

- www.tatamcgrawhill.com/digital_solutions/monippally
- www.dictionary.cambridge.org



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- www.wordsmith.org
- www.edufind.com
- www.english_the_easy_eay.com
- www.englishclub.com
- www.english_grammar_lessons.com
- www.wikipedia.org/wiki/english_grammar

Program: Diploma CSE

Semester: II

Course: Computer Assembly and Repair II Lab

Course Code: 3DPCC104P

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Learning Objective

Students get the knowledge to support and maintain computer systems, desktops, and peripherals. This includes installing, diagnosing, repairing, maintaining, and upgrading all hardware and equipment while ensuring optimal workstation performance.

List of Experiments:

1. Basic Blocks of a Digital Computer

Central Processing Unit (CPU), Memory-Primary Memory & Secondary Memory, Input Devices/Output Devices, Storage Devices , Motherboard : CPU Socket, Memory Slots, Expansion Slots (PCIe, PCI),Power Connectors, Chipset.

2. Hardware Identification

Graphics Card (GPU)-GPU brands (NVIDIA, AMD) ,connectors (PCIe, HDMI, Display Port),VRAM capacity, core count, clock speed, Input and Output Devices: Input Devices-(keyboard, mouse, scanner),Output Devices-(monitor, printer, speakers),connectors (USB, PS/2, HDMI, VGA), Expansion Cards-Graphics cards, sound cards, network cards, storage controllers, slots (PCIe, PCI), Interfaces and Ports-USB (Type-A, Type-C),HDMI, Display Port, VGA, DVI, Ethernet (RJ45),Data transfer rates, versions (USB 2.0, USB 3.0, USB 3.1, HDMI 2.0),Hardware Identification-Software tools (CPU-Z, GPU-Z, HW Monitor), Screwdrivers, anti-static wrist straps, magnifying glass.

3. Hardware Removal, Testing, Replacement, and Installation

Removing Hardware Components ,Removing the CPU, Removing RAM, Removing Storage Devices, Removing the GPU, Removing the PSU, Disconnecting all power connectors ,Removing the Motherboard, Testing Hardware Components-Visual Inspection, Using Diagnostic Software, Using Diagnostic Hardware: Replacing Faulty Components-Identifying Replacement Parts, Acquiring Replacement Parts, Installing New Components: CPU,RAM, Storage Devices, Installing the GPU, PSU, Motherboard ,Verifying Installation and Functionality- Initial Power-On, BIOS/UEFI Configuration, Operating System Checks.

4. Operating System & Application Software Installation

Operating System & Application Software Installation, Introduction to Operating Systems -Definition and Purpose, Types of Operating Systems, Pre-Installation Preparation-

System Requirements, Backup and Data Safety ,Partitioning and Formatting, Installing Windows Operating System-Creating Installation Media, Post-Installation Setup.

5. PC Cleaning & Hardware Troubleshooting

Introduction to PC Maintenance -Importance of Regular Maintenance, Safety Precautions, Tools and Supplies for Cleaning-Screwdrivers (Phillips, flathead),Compressed air canisters, Soft brushes and microfiber cloths, Isopropyl alcohol and cotton swabs, Cable ties and management tools, Cleaning the Exterior- ,Cleaning the Interior-Shutting Down and Unplugging, Opening the Case, Removing Dust and Debris.

6. System Utilities and Virus Removal

Security Utilities-Antivirus and Antimalware Software, Firewall Protection, Encryption Tools, Introduction to Computer Viruses and Malware-Types of Malicious Software, How Malware Spreads, Symptoms of Infection, Virus and Malware Detection-Running Antivirus Scans, Using Antimalware Tools, Virus and Malware Removal- Removing Detected Threats, Manual Removal Techniques, Using Bootable Rescue Disks, Preventing Future Infections-Safe Browsing Practices, Email Safety, Regular Software Updates.

7. User Account Customization

Customizing User Account Control (UAC)-Understanding UAC, Configuring UAC Settings, Personalizing Application Settings-Browser Customization, Email Client Customization,, Managing User Files and Folders-Organizing User Data, Using Cloud Storage, Security and Privacy Settings-Password Management, Two-Factor Authentication (2FA):,Privacy Settings, Backup and Recovery of User Accounts-Setting Up Backup Options, Restoring User Accounts.

8. Windows Update, Software Installation & Device Drivers

Importance of Windows Updates-Purpose of Updates, Configuring Windows Update Settings-Automatic Updates, Manual Updates, Managing Windows Update-Viewing Update History, Troubleshooting Update Issues, Software Installation on Windows-Installing Applications, Using Package Managers.

References:

1. Dan Gookin, Troubleshooting & Maintaining Your PC ALL-IN-ONE, 3rd Edition,2017, John Wiley & Sons.
2. Mike Meyers, Scott Jernigan, Dan Lachance,” CompTIA Fundamentals + Exam Guide (All-in-One), 2nd Edition, 2019, Mc Graw Hill Education.
3. Inside PC Norton
4. Computer Installation and servicing BPB Publication
5. OS Programming Peter Norton
6. Servicing PC and Computers BPB Publication

Web References:

1. https://www.youtube.com/watch?v=ItxwyMR0SnY&list=PLeH4ngtDM7eE-1_mdWuXWyZrI_FMHnyJ0&index=5
2. <https://www.cleverfiles.com/howto/crashed-hard-drive-recovery.html>