

Kashi Institute of Technology, Varanasi

(An Autonomous Institute Approved by AICTE)



Evaluation Scheme & Syllabus

For

Diploma 1st Year

(Computer Science and Engineering)

(Effective from Session:2025-26)

Diploma in Computer Science and Engineering I Semester											
					Evaluation Scheme						
S.N.	Course Category	Course Code	Course Title	Type	Periods			FA	SA	Total	Credit
					L	T	P				
1	HS	DHS101	Communication Skill –I	T	2	0	0	70	30	100	2
2	BS	DBS101	Applied Mathematics-I	T	3	1	0	70	30	100	4
3	BS	DBS103	Applied Physics	T	2	1	0	70	30	100	3
4	PC	DCSPC101	Digital Application Fundamentals- STEM	T	3	0	0	70	30	100	3
5	ES	DES105	Fundamentals of Computers	T	3	0	0	70	30	100	3
6	ES	DES103	Office Automation Lab	P	0	0	2	70	30	100	2
7	HS	DHS103	Communication Skill- I lab	P	0	0	2	70	30	100	1
8	BS	DBS107	Applied Physics Lab	P	0	0	2	70	30	100	1
9	PC	DCSPC103	Digital Application Fundamentals- STEM Lab	P	0	0	2	70	30	100	1
10	CCA	DCCA101	Co-Curricular Activities	-	-	-	-	-	-	100	0.5
11	GP	DGP101	General Proficiency	-	-	-	-	-	-	100	0.5
Total				-	13	2	8	630	270	1100	21

Diploma in Computer Science and Engineering II Semester											
					Evaluation Scheme						
SN	Course Category	Course Code	Course Title	Type	Period			FA	SA	Total	Credit
					L	T	P				
1	BS	DBS102	Applied Mathematics II	T	3	1	0	70	30	100	4
2	BS	DBS106	Applied Chemistry	T	2	1	0	70	30	100	3
3	EC	DES104	Advanced Excel	T	2	1	0	70	30	100	3
4	PC	DCSPC102	Concept of Programming Using C	T	3	0	0	70	30	100	3
5	PC	DCSPC104	Introduction to Cybersecurity	T	3	0	0	70	30	100	3
6	BS	DBS110	Applied Chemistry Lab	P	0	0	2	70	30	100	1
7	ES	DES118	Advanced Excel Lab	P	0	0	2	70	30	100	1
8	PC	DCSPC106	Concept of Programming Using C Lab	P	0	0	2	70	30	100	1
9	PC	DCSPC108	Introduction to Cybersecurity Lab	P	0	0	2	70	30	100	1
10	CCA	DCCA102	Co-Curricular Activities	-	-	-	-	-	-	100	0.5
11	GP	DGP102	General Proficiency	-	-	-	-	-	-	100	0.5
Total				-	13	3	8	630	270	1100	21

**DETAILED SYLLABUS
DIPLOMA 1st Year**

- **Computer Science & Engineering 1st Semester**

(Effective from Session: 2025-26)

Diploma in Computer Science and Engineering						
Semester: I			Course Category: HS			
Course Code:	Course		Period / Week			Credit
			L	T	P	C
DHS101	Communication Skills -I		2	0	0	2
Prerequisite	After completion of the course, students are able to -				Bloom's Level	
Course Outcome	CO1	Introduce, converse, show interest and respond.			K1,K3	
	CO2	Improve decisions through practical exercises and cases.			K3	
	CO3	Improve Reading Skills			K3,K5	
	CO4	Present, write effectively, and give feedback.			K2,K3	
	CO5	Improve his communication related to industry-based.			K2,K3	
UNIT – I	BASICS OF COMMUNICATION FOR CAREER DEVELOPMENT				Contact Hours: 6	
Meaning of Communication, Role and Scope of Communication, Barriers of Communication, Types of Communication, Process of Communication, Role of Communication in the Corporate field.					CO1	
UNIT – II	APPLICATION OF GRAMMAR				Contact Hours: 6	
Verb, Tense, Active & Passive voice, Direct & Indirect speech.					CO2	
UNIT – III	READING SKILLS				Contact Hours: 6	
Unseen passage for comprehension (one word substitution, prefixes, suffixes, antonyms, synonyms etc. based upon the passage to be covered under this topic)					CO3	
UNIT – IV	WRITING SKILLS				Contact Hours: 6	
Email writing, Letter/Report writing, CV/Resume creation, paragraph writing, and notice writing.					CO4	
UNIT 5	INTERVIEW SKILLS & SELF ANALYSIS				Contact Hours: 6	
Giving self-introduction, Telephonic Interviews, Etiquettes to follow during an interview session, Swat analysis.					CO5 Contact Hours: 6	
Lecture Hour: 30		TUTORIAL HOURS: 0			TOTAL: 30	
Reference Books:						
<ol style="list-style-type: none"> How to Win Friends and Influence People by Dale Carnegie Simon and Schuster, 1936. Advance English Grammar by D.S. Paul Business Communication by M. Raman, Oxford University Press. Word Power Made by Easy by Norman Lewis 30 days to Better English by Norman Lewis Learn English Through Hindi 						

Diploma in Computer Science and Engineering						
Semester: I			Course Category: BS			
Course Code	Course		Period / Week			Credit
			L	T	P	C
DBS101	Applied Mathematics I		3	1	0	4
Prerequisite	<i>At the end of this course, the students will be able to:</i>				Bloom's Level	
Course Outcome	CO1	<i>Understand the concepts of Arithmetic mean, geometric mean, and linear equation.</i>			K ₂	
	CO2	<i>Apply dot & cross products of vectors to find the solution of engineering problems and use complex numbers in various engineering problems.</i>			K ₃ ,	
	CO3	<i>Understand the concept of the Relation between sides and angles of a triangle</i>			K ₂	
	CO4	<i>Apply differential calculus and higher-order methods to solve engineering problems.</i>			K ₃	
	CO5	<i>Find velocity, acceleration, errors, and approximation in engineering problems with the application of derivatives.</i>			K ₃ ,K ₄	
UNIT – I	Algebra-I				Contact Hours:12	
Arithmetic Mean: nth term, sum, Mean Geometric Mean: nth term, sum, Mean. Determinants: Elementary properties of determinants of order 2 and 3, system of linear equations and solution, Cramer's Rule.					CO1	
UNIT – II	Algebra-II				Contact Hours:12	
Vector Algebra: Dot and cross product, Scalar and vector triplet product. Complex Numbers: Representation, Modulus, and Amplitude. De Moivre's theorem application in solving algebraic equations.					CO2	
UNIT – III	Trigonometry				Contact Hours: 12	
Relation between sides and angles of a triangle: Statement of various formulas showing the relationship between sides and angles of a triangle.					CO3	
UNIT – IV	Differential Calculus-I				Contact Hours:12	
Functions, limits, continuity, elementary methods of finding limits (right and left), Method of finding derivatives, functions of a function, Logarithmic Differentiation.					CO4	
UNIT – V	Differential Calculus-II				Contact Hours: 12	
Higher order derivatives Derivatives of Special Functions (Exponential, Logarithmic, and Inverse circular functions).					CO5	
Lecture Hours:45			Tutorials Hours:15		Total:60	
Reference Books:						
<ol style="list-style-type: none"> 1. <i>Elementary Engineering Mathematics</i> by BS Grewal, Khanna Publishers, New Delhi 2. <i>Engineering Mathematics, Vol I & II</i> by SS Sastry, Prentice Hall of India Pvt. Ltd., 3. <i>Applied Mathematics-I</i> by Chauhan and Chauhan, Krishna Publications, Meerut. 						
Text Book						
<ol style="list-style-type: none"> 1. <i>Applied Mathematics-I (A)</i> by Kailash Sinha and Varun Kumar; Aarti Publication, Meerut 						

Diploma in Computer Science and Engineering						
Semester: I			Course Category: BS			
Course Code	Course		Period / Week			Credit
			L	T	P	C
DBS103	Applied Physics		2	1	0	3
Prerequisite	<i>At the end of this course, the students will be able to:</i>				Bloom's Level	
Course Outcome	CO1	<i>Understanding the concept of measurement of physical quantity and units</i>			K₂	
	CO2	<i>State and explain Newton's first law of motion. Identify the given example of (types of) forces. Compare and contrast speed, velocity and acceleration.</i>			K₁,K₄,K₂	
	CO3	<i>Understand the concept of work and how to calculate the work done by force. Understand the concept of the net work done on an object and how that relates to a change in speed of the object. Understand the concept of power.</i>			K₂,K₃	
	CO4	<i>In this unit on matter, students learn to differentiate physical and chemical changes in matter. They also learn that matter is made up of small particles called atoms and molecules.</i>			K₂,K₄	
	CO5	<i>Ability to understand the basic concepts of thermodynamics, such as temperature, pressure, system, properties, process, state, cycle, and equilibrium.</i>			K₂,K₅	
UNIT – I	Units and Dimensions				Contact Hours: 08	
1.1 Need for Measurement in engineering and science, units of physical quantities - fundamental and derived units, systems of units (FPS, CGS, and SI units) 1.2 Dimensions and dimensional formulae of physical quantities. 1.3 Principle of homogeneity of dimensions 1.4 Limitations of dimensional analysis 1.5 Accuracy and precision of instruments, rules for representing significant figures in calculations.					CO1	
UNIT – II	Force and Motion				Contact Hours: 08	
2.1 Scalar and vector quantities – examples, representation of vectors, types of vectors 2.2 Addition and Subtraction of Vectors, Triangle and Parallelogram Law (Statement only), Scalar and Vector Product. 2.3 Resolution of Vectors. 2.4 Force, Momentum, Statement, and Derivation of Conservation of Linear Momentum, its applications, such as the recoil of a gun. 2.5 Circular motion (Uniform and Non-uniform), definition of angular displacement, angular velocity, angular acceleration, frequency, time period. 2.6 Relation between linear and angular velocity, linear acceleration, and angular acceleration (related numerical) 2.7 Central force, Expression and Applications of Centripetal and Centrifugal Forces.					CO2	
UNIT – III	Work, Power, and Energy				Contact Hours:08	
3.1 Work: and its units, examples of zero work, positive work, and negative work, Conservative and non-conservative force. 3.2 Friction: modern concept, types, laws of limiting friction, Coefficient of friction 3.3 Work done in moving an object on horizontal and inclined planes for rough and plane surfaces with its applications 3.4 Energy and its units: Kinetic energy and potential energy with examples and their derivation, work energy theorem. 3.6 Power and its units, calculation of power in numerical problems.					CO3	

UNIT – IV	Properties of Matter	Contact Hours:08
4.1 Elasticity: definition of stress and strain, different types of moduli of elasticity, Hooke’s law, significance of stress-strain curve. 4.2 Pressure: definition, its units, atmospheric pressure, gauge pressure, absolute Pressure. 4.3 Surface tension: concept, its units, angle of contact. 4.4 Viscosity and coefficient of viscosity: Terminal velocity, Stokes’s law, and effect of temperature on viscosity, application in hydraulic systems. 4.5 Concept of fluid motion, streamline and turbulent flow, Equation of continuity, Bernoulli’s Theorem, and their applications.		CO4
UNIT – V	Heat and Thermodynamics	Contact Hours: 08
5.1 Difference between heat and temperature. 5.2 Modes of transfer of heat (Conduction, convection, and radiation with examples). 5.3 Different scales of temperature and their relationship. 5.4 Isothermal and Adiabatic Processes. 5.5 Zeroth, First, and second law of thermodynamics, Heat engine (concept Only), Carnot Cycle.		CO5
Lecture Hours:30		Tutorials Hours:10
		Total:40
Reference Books:		
1 <i>Text Book of Physics for Class XI (Part-I, Part-II); N.C.E.R.T., Delhi</i> 2 <i>Concepts in Physics by HC Verma, Vol. I & II, Bharti Bhawan Ltd., New Delhi</i> 3 <i>Comprehensive Practical Physics, Vol. I & II, JN Jaiswal, Laxmi Publications (P) Ltd., New Delhi</i> 4 <i>Engineering Physics by PV Naik, Pearson Education Pvt. Ltd, New Delhi</i> 5 <i>Engineering Physics by DK Bhattacharya & Poonam Tandan; Oxford University Press, New Delhi</i>		

Diploma in Computer Science and Engineering						
Semester: I			Course Category: PC			
Course Code	Course		Period / Week			Credit
			L	T	P	C
DCSPC101	DIGITAL APPLICATION FUNDAMENTALS- STEM		3	0	0	3
Prerequisite	<i>At the end of this course, the students will be able to:</i>				Bloom's Level	
Course Outcome	CO1	<i>To describe the basic structure and components of emerging technology applications and explain the concept of User Interfaces (UI) and system architecture.</i>			K ₂ , K ₃	
	CO2	<i>To classify different types of databases and demonstrate basic data storage, retrieval, and simple query operations.</i>			K ₂	
	CO3	<i>Apply internet tools, search techniques, and digital communication methods with awareness of cybersecurity practices.</i>			K ₃	
	CO4	<i>To explain the fundamentals of programming languages and develop simple programs using variables, control structures, and operators.</i>			K ₂	
	CO5	<i>To describe algorithms and demonstrate the ability to write basic algorithms and represent them through flowcharts and pseudocode</i>			K ₂ , K ₃	
UNIT – I	Introduction to Digital Application and Emerging Technology				Contact Hours: 08	
What are Emerging Technologies? (AI, IoT) — overview Components of a Technology Application, Introduction to User Interface (UI) & User Experience (UX), Basics of System Architecture.						
UNIT – II	Data Management Concepts and Database Fundamentals				Contact Hours: 08	
Database, Types of Databases: Relational (SQL) & Non-Relational (NoSQL), Basics of Data Storage & Retrieval, Simple Data Tables & Queries (SQL basics)						
UNIT – III	Internet and Web Technologies				Contact Hours: 08	
Basics of Internet, Intranet, WWW, Browsers and search engines (Google, Bing), Introduction to URLs, domains, HTTP/HTTPS, Introduction to Email (Gmail/Outlook): sending, receiving, attachments, Cybersecurity basics: safe browsing, phishing, passwords, Cloud computing fundamentals (Google Drive, OneDrive).						
UNIT – IV	Programming and Logical Thinking				Contact Hours: 08	
Introduction to Programming Language (C, Python), Introduction to Python or HTML basics, Variables, Data Types, Operators, conditions loops, and functions (basics only).						
UNIT – V	Algorithm Design and Logical Problem Solving				Contact Hours: 08	
Algorithm, Characteristics of a Good Algorithm, Writing Simple Algorithms (Addition, Factorial, Search), Introduction to Flowcharts & Pseudocode.						
Lecture Hours: 40			Tutorials Hours:00		Total: 40	
MEANS OF ASSESSMENT						
<ul style="list-style-type: none"> • Assignments and quiz/class tests, mid-term and end-term written tests • Actual laboratory and practical work, exercises, and viva-voce • Software installation, operation, development, and viva-voce 						
Reference Books:						
1. Fundamentals of Computer by V Rajaraman; Prentice Hall of India Pvt. Ltd., New Delhi 2. Computer Fundamentals by RS Salaria; Khanna Book Publishing Co. (P) Ltd., New Delhi						

Diploma in Computer Science and Engineering					
Semester: I			Course Category: ES		
Course Code	Course	Period / Week			Credit
		L	T	P	C
DES105	FUNDAMENTALS OF COMPUTERS	3	0	0	3
Prerequisite	<i>At the end of this course, the students will be able to:</i>				Bloom's Level
Course Outcome	CO1	Know the fundamental terms associated with computers.			K ₁ ,K ₂
	CO2	Know different types of memory, storage device , various input and output devices.			K ₁ ,K ₂
	CO3	To understand different number systems			K ₂
	CO4	Learn interconversions among Binary, Decimal, Octal, and Hexadecimal number systems			K ₁ ,K ₃
	CO5	To understand the basics of computer networks, their types, internet technologies, cloud computing, and cyber security concepts.			K ₂ ,K ₃
UNIT – I	Introduction to Computers				Contact Hours: 08
Definition and characteristics of computers, History and generations of computers, Types of computers (Analog, Digital, Hybrid, Super, Mini, Micro), Applications of computers in various fields, Block diagram of a computer system.					CO1
UNIT – II	Computer Hardware				Contact Hours: 08
Input devices (keyboard, mouse, scanner, etc.), Output devices (monitor, printer, speakers, etc.), Memory, Central Processing Unit (CPU: ALU, CU, Registers), Storage devices and their types.					CO2
UNIT – III	Number Systems				Contact Hours: 08
Introduction to Number System, Decimal System, Binary System, Hexadecimal System, Octal System, ASCII Code.					CO3
UNIT – IV	Conversion of Number System				Contact Hours: 08
Binary to Decimal, Decimal to Binary, Binary to Octal, Octal to Binary, Octal to Decimal, Decimal to Octal, Binary to Hexadecimal, Hexadecimal to Binary, Hexadecimal to Decimal, Decimal to Hexadecimal.					CO4
UNIT – V	Computer Networks and Internet				Contact Hours: 08
Basics of computer networks, Types of networks (LAN, MAN, WAN), Internet, Intranet, and Extranet, Email, WWW, Search engines, Cloud computing, Cyber security (viruses, antivirus)					CO5
Lecture Hours: 40		Tutorials Hours:00		Total: 40	
Reference Books:					
<ol style="list-style-type: none"> 1. <i>Fundamentals of Computers</i> – V. Rajaraman. 2. <i>Fundamentals of Computers</i> – P.K. Sinha & Priti Sinha 3. <i>Computer Fundamentals</i> – Anita Goel 					

Diploma in Computer Science and Engineering					
Semester: I			Course Category: ES		
Course Code	Course	Period/Week			Credit
		L	T	P	C
DES103	OFFICE AUTOMATION LAB	0	0	2	1
Prerequisite	<i>At the end of this course, the students will be able to:</i>				
Course Outcome	CO1	<i>Learn how to create well-formatted documents, apply bullets/numbering and mail merge.</i>			
	CO2	<i>To understand the data effectively using conditional formatting and lookup function in Excel.</i>			
	CO3	<i>Learn different type of Excel functions and types of charts.</i>			
	CO4	<i>To design PowerPoint presentation with slide, transition.</i>			
	CO5	<i>To learn generating customized documents with Mail Merge. And enhancing image, audio. And video.</i>			
List of Practical:					
1. Create a simple document with proper formatting (font styles, sizes, bold, italics, underline). 2. Prepare a document using bullets, numbering, and alignment features, insert image. 3. Create a mail merge for sending invitation letters.					CO1
4. Use conditional formatting to highlight specific values (e.g., marks < 40 in red). 5. Implement lookup functions (VLOOKUP, HLOOKUP) for data searching.					CO2
6. Use built-in functions like SUM, AVERAGE, MAX, MIN, IF. 7. Create different types of charts (bar, pie, line) for given data.					CO3
8. Create a PowerPoint presentation with at least 5 slides on a given topic. 9. Apply animations, slide transitions, and design themes.					CO4
10. Use Mail Merge with Excel data in Word to generate customized letters or certificate. 11. Insert images, audio, and video in slides.					CO5

Diploma in Computer Science and Engineering					
Semester: I			Course Category: HS		
Course Code	Course	Period/Week			Credit
		L	T	P	C
DHS103	COMMUNICATION SKILL-I LAB	0	0	2	1
Prerequisite	<i>At the end of this course, the students will be able to:</i>				
Course Outcome	CO1	<i>Able to speak correctly in a grammatically correct form</i>			
	CO2	<i>Improvement of Listening ability</i>			
	CO3	<i>Write various types of paragraphs, notices for different purposes, and a composition picture with an appropriate format</i>			
	CO4	<i>Reproduce and match words and sentences in a paragraph</i>			
	CO5	<i>Understand the importance of effective communication</i>			
List of Practical					
1. Listening and Speaking Exercises					CO1
2. Self and peer introduction					
3. Newspaper Reading					CO2
4. Just a minute session – Extempore					
5. Greeting and starting a conversation					CO3
6. Discuss about likes and dislikes					
7. Group Discussion					CO4
8. Mock Interviews Practice					
9. Short Story Telling (Moral and Brief Summary)					CO5
10. Enrichment of English Vocabulary					

Diploma in Computer Science and Engineering					
Semester: I			Course Category: BS		
Course Code	Course	Period/Week			Credit
		L	T	P	C
DBS107	Applied Physics Lab	0	0	2	1
Prerequisite	<i>At the end of this course, the students will be able to:</i>				
Course Outcome	CO1	<i>Understand the concept of rotational motion of a rigid body and its applications</i>			
	CO2	<i>Describe conservation of energy and its applications</i>			
	CO3	<i>Express physical work in terms of heat and temperature; Measure temperature in various processes on different scales (Celsius, Kelvin, Fahrenheit, etc.)</i>			
	CO4	<i>Distinguish between conduction, convection, and radiation, and identify the different methods for reducing heat losses</i>			
	CO5	<i>Understand the laws of thermodynamics, the Carnot cycle, and their applications.</i>			
List of practical:					
1. To find the radius of the wire and its volume, and the maximum permissible error in these quantities, by using both vernier calipers and screw gauge.					CO1
2. To find the value of acceleration due to gravity on the surface of Earth by using a simple pendulum.					
3. To determine the atmospheric pressure at a place using Fortin's Barometer .					CO2
4. To verify the parallelogram law of forces.					
5. To study the conservation of energy of a ball or cylinder rolling down an inclined plane.					CO3
6. To find the Moment of Inertia of a flywheel about its axis of rotation.					
7. To determine the viscosity of glycerin by Stokes' method.					CO4
8. To determine the force constant of the spring using Hook's law.					CO5

Diploma in Computer Science and Engineering					
Semester: I			Course Category: PC		
Course Code	Course	Period/Week			Credit
		L	T	P	C
DCSPC103	DIGITAL APPLICATION FUNDAMENTALS- STEM LAB	0	0	2	1
Prerequisite	<i>At the end of this course, the students will be able to:</i>				
Course Outcome	CO1	<i>To understand and try out new technologies like AI, IoT, Cloud, and simple app structures.</i>			
	CO2	<i>To learn how data is stored in databases and how to get it back using simple commands.</i>			
	CO3	<i>Apply internet tools, search techniques, and digital communication methods with awareness of cybersecurity practices.</i>			
	CO4	<i>To learn few basics of programming languages (C/Python) and practice simple programs using variables, operators, and control statements only</i>			
	CO5	<i>To understand algorithms, write simple algorithms, and draw flowcharts for basic problems.</i>			
List of Practical:					
1. Create a basic webpage with good UI using HTML/CSS. 2. Build a login form with UI and validate input (UX). 3. Connect a Arduino with IoT sensor and display values.					CO1
4. Install and open MySQL software. 5. Make a simple database and a table (like Student). 6. Add, update, and delete some records. 7. Fetch specific records using basic queries like SELECT * FROM table.					CO2
8. Create and send an email using Gmail or Outlook with subject and message body. 9. Create a strong password using a password policy and check strength using online tools. 10. Upload files to Google Drive , create folders, and share files with permission settings.					CO3
11. Write a program to add, subtract, multiply, and divide two numbers. 12. Write a program to check whether a number is even or odd using if-else. 13. Write a program to swap two numbers using a temporary variable.					CO4
14. Write an algorithm and draw a flowchart to add two numbers. 15. Write an algorithm and flowchart to find whether a number is even or odd. 16. Write an algorithm for a simple search problem (like finding an item in a list).					CO5

**DETAILED SYLLABUS
DIPLOMA 1st Year**

- **Computer Science & Engineering 2nd Semester**

(Effective from Session: 2025-26)

Diploma in Computer Science and Engineering					
Semester: II			Course Category: BS		
Course Code	Course	Period / Week			Credit
		L	T	P	C
DBS102	APPLIED MATHEMATICS-II	3	1	0	4
Prerequisite	<i>At the end of this course, the students will be able to:</i>				Bloom's Level
Course Outcome	CO1	Calculate simple integration by methods of integration.			K3,K4
	CO2	Evaluate the area under curves, surface by using definite integrals.			K2,K3
	CO3	Solve the engineering problems with numerical methods .			K3
	CO4	Explain the function of the system components including Processor, Motherboard and Input-output devices.			K2
	CO5	Understand the geometric shapes used in engineering problems by co-ordinate geometry.			K2,K3
UNIT – I	Integral Calculus – I				Contact Hours :12
(i) Methods of Indefinite Integration : (ii) Integration by substitution. (iii) Integration by rational functions. (iv) Integration by partial function. (v) Integration by parts.					CO1
UNIT – II	Integral Calculus – II				Contact Hours :12
Meaning and properties of definite integrals, Evaluation of definite integrals. Simposns 1/3rd and Simposns3/8th rule and Trapezoidal Rule : their application in simple cases.					CO2
UNIT – III	Numerical solutions				Contact Hours :12
Numerical solutions of algebraic equations; Bisections method, Regula Falsi method, Newton-Raphson's method(without proof), Numerical solutions of simultaneous equations; Gauss elimination method(without proof).					CO3
UNIT – IV	Co-ordinate Geometry (2 Dimension)				Contact Hours :12
Equation of circle in standard form. Centre - Radius form, Diameter form, Two intercept form.					CO4
UNIT – V	Co-ordinate Geometry (3 Dimension)				Contact Hours :12
Straight lines and planes in space. Distance between two points in space, direction cosine and direction ratios, Finding equation of a straight line (without proof).					CO5
Lecture Hours :45			Tutorials Hours :15		Total :60
Reference Books:					
<ol style="list-style-type: none"> 1. Applied Mathematics-II by Ajay Kumar ,Jai Prakash Nath Publication Merrut. 2. Applied Mathematics-II by H.R. Luthera, Bharat Bharati Publication Merrut 3. Applied Mathematics-II by Kailash Sinha , BBP Publication,Merrut 					

Diploma in Computer Science and Engineering						
Semester: II			Course Category: BS			
Course Code	Course		Period / Week			Credit
			L	T	P	C
DBS106	Applied Chemistry		2	1	0	3
Prerequisite	At the end of this course, the students will be able to:				Bloom's Level	
Course Outcome	CO1	Describe the three subatomic particles in an atom. Explain the differences between protons, neutrons, and electrons. Recap the characteristics of elements in the Periodic table. Differentiate between polar and non polar covalent			K1,K2	
	CO2	Developing the basic idea about lubricant and also help us to understand the different sources of water.			K2,K3,K5	
	CO3	Student will be able to define water. Explain the role of water for human and plants. Discuss and explain water cycle.			K2	
	CO4	Identify the primary oxidation and reduction reaction for corrosion. Differentiate between general corrosion and localized corrosion.			K2,K4	
	CO5	Understand how the thermodynamic of organic reaction define the direction and kinetics define the rate at which they proceed. Provides important information regarding Molecular weight, Glass transition temperature & Crystallization of Polymers.			K1,K2,K6	
UNIT – I	Atomic structure, Periodic Table and Chemical Bonding				Contact Hours: 08	
1. Fundamental particles- mass and charges of electrons, protons and neutrons. 2. Bohr's model of atom and limitations. 3. Atomic number, atomic mass number isotopes and isobars. 4. Definition of orbit and orbitals, shapes of s and p orbitals only, 5. Aufbau's principle, Hund's rules. Electronic configuration of elements with atomic number (Z) = 20 only. 6. Chemical bonding – General introduction about ionic bond & covalent bonds					CO1	
UNIT – II	Fuels and Lubricants				Contact Hours: 08	
2.1 .Definition& Classification of fuels, characteristics of good fuel. 2.2 Calorific value-higher calorific value, lower calorific value, determination of calorific value of solid or liquid fuel using Bomb calorimeter and numerical examples. Coal - types of coal and proximate analysis of coal. Gaseous fuels–chemical composition, and applications of natural gas (CNG), LPG, Lubricants: Definition properties and industrial applications					CO2	
UNIT – III	Water				Contact Hours :08	
Hard water, types of hardness, causes of hardness, units of hardness– mg per liter (mgL ⁻¹) and part per million (ppm) and simple numerical, Disadvantages caused by the use of hard water in domestic and boiler feed water. Primming and foaming and caustic embrittlement in boilers. Removal of hardness - Permutit process.					CO3	
UNIT – IV	Corrosion and its Control				Contact Hours :08	
1. Definition of corrosion. Redox Reaction. 2. Theories of <ol style="list-style-type: none"> 1. Dry (chemical) corrosion- Pilling Bedworth rule 2. Wet corrosion in acidic atmosphere by hydrogen evolution mechanism 3. Corrosion control: <ol style="list-style-type: none"> 1. Metal coatings – Zn (Sherardizing), Electroplating 					CO4	

2. Organic coatings - use of paints, varnishes.		
UNIT – V	Organic compound, Polymers and Plastics periods	Contact Hours: 08
1. Definition of polymer, monomer and degree of polymerization 2. Brief introduction to addition and condensation polymers with suitable examples (PE, PVC, Teflon, Nylon -66 and Bakelite) 3. Thermo plastics and thermo setting plastics.		CO 5
Lecture Hours: 30	Tutorials Hours :10	Total :40
Reference Books: 1 Pradeep's New Course Chemistry for class XII (Vol I and II) 2 Modern's ABC of Chemistry Class - 12 (Part 1 & 2) 3 Concise Inorganic Chemistry 4 Modern Approach to Chemical Calculations		

Diploma in Computer Science and Engineering						
Semester: II				Course Category: ES		
Course Code	Course		Period / Week			Credit
			L	T	P	C
DES104	ADVANCED EXCEL		3	0	0	3
Prerequisite	<i>At the end of this course, the students will be able to:</i>					Bloom's Level
Course Outcome	CO1	<i>Use Excel for data entry, formatting, and analysis.</i>				K₁,K₂
	CO2	<i>To understand organize, clean, and analyze data efficiently using Excel's basic formulas and data management tools.</i>				K₁,K₂
	CO3	<i>Learn different types of Functions and Formulas</i>				K₂
	CO4	<i>To understand visualize data using charts and PivotTables</i>				K₁,K₃
	CO5	<i>To understand how manage multiple worksheets, and protecting sheets.</i>				K₂,K₃
UNIT – I	Introduction to Excel					Contact Hours: 08
Introduction to Spreadsheet concepts, Excel interface: ribbons, menus, toolbars, worksheets, Entering and editing data, Formatting cells (font, color, borders, alignment), Saving, opening, closing, and printing workbooks.						CO1
UNIT – II	Basic Formula in Excel					Contact Hours: 08
Basic formulas and functions (SUM, AVERAGE, MAX, MIN, COUNT), AutoFill, Flash Fill, and Data Validation, Sorting and Filtering data, Find and Replace.						CO2
UNIT – III	Advanced Formulas & Functions					Contact Hours: 08
<ul style="list-style-type: none"> • Logical Functions (IF, AND, OR, NOT). • Text Functions (LEFT, RIGHT, MID, TRIM, CONCATENATE). • Lookup Functions (VLOOKUP, HLOOKUP). • Math & Date Functions (SUMIF, COUNTIF, TODAY, DATEDIF) 						CO3
UNIT – IV	Charts, Graphs, and Visualization					Contact Hours: 08
Creating and formatting charts (Column, Line, Pie, Bar, Area), Advanced chart types (Combo chart, Histogram, Sparklines), Adding trendlines and data labels, PivotTables and PivotCharts						CO4
UNIT – V	Advanced Excel Features					Contact Hours: 08
Working with multiple worksheets & workbooks, Protecting cells, sheets, and workbooks (password protection), Linking multiple sheets and workbooks, Importing/exporting data (CSV, Text files).						CO5
Lecture Hours : 40			Tutorials Hours :00			Total: 40
Reference Books:						

1. ***Excel 2021 Bible*** – Michael Alexander, Richard Kusleika, John Walkenbach.
2. ***Excel Formulas and Functions for Dummies*** – Ken Bluttman.
3. ***Excel 2021 Power Programming with VBA*** – Michael Alexander & Dick Kusleika.

Diploma in Computer Science and Engineering						
Semester: II			Course Category: PC			
Course Code	Course		Period / Week			Credit
			L	T	P	C
DCSPC102	CONCEPT OF PROGRAMMING USING C		3	0	0	3
Prerequisite	<i>At the end of this course, the students will be able to:</i>				Bloom's Level	
Course Outcome	CO1	<i>Identify the problem and formulate an algorithm for it. Identify various control structures and implement them</i>			K ₁ ,K ₂	
	CO2	<i>Identify various types of variables. Use pointer in an array and structure. Use structures and union for handling data.</i>			K ₁ ,K ₃	
	CO3	<i>Explain the concepts of C programming language Explain and implement the language constructs concepts</i>			K ₆	
	CO4	<i>Install C software on the system and debug the program, Explain and execute member functions of C in the program.</i>			K ₁ ,K ₂	
	CO5	<i>Describe and implement array concept in C program, Describe and execute pointers, Expose File System using File Handling.</i>			K ₁ ,K ₂ ,K ₆	
UNIT – I	Algorithm and Program Structure				Contact Hours : 08	
Steps in development of a program, algorithm development, concept of flowcharts, various techniques of programming, Structured Programming, Preprocessors, Debugging, Compiling, Structure of C program, Writing and executing the first C program, Translator: Assembler, Interpreter, Compiler, I/O statement, assign statement, Keywords, constants, variables and data types, Data Type Casting					CO1	
UNIT – II	Control Structures and Functions				Contact Hours : 08	
Introduction, decision making with IF– statement, IF –Else and Nested IF, Ladder if-else, Loop: While, do-while, for, Break, Continue, goto and switch statements Introduction to functions, Global and Local Variables, Function Declaration, Function Call and Return, Types of Functions, Standard functions, Parameters and Parameter Passing, Call - by value/reference, recursive function, function with array, function with string					CO2	
UNIT – III	Arrays and Strings				Contact Hours : 08	
Introduction to Arrays, Array Declaration, Length of array, Manipulating array elements, Single and Multidimensional Array, Arrays of characters, Passing an array to a function, Introduction of Strings, String declaration and definition, String Related functions i.e. strlen, strcpy, strcmp					CO3	
UNIT – IV	Pointers				Contact Hours : 08	
Introduction to pointers, Static and dynamic memory allocation, Address operator and pointers, Declaring and initializing pointers, Single pointer, Pointers to an array					CO4	
UNIT – V	Structures and Unions				Contact Hours : 08	
Declaration of structures, Accessing structure members, Structure Initialization, array of structure variable, Pointer to a structure, Union, Declaration of Union, Basics of File Handling, opening and closing of a File, reading and writing characters from a file					CO5	
Lecture Hours: 40			Tutorials Hours:00		Total: 40	
Reference Books:						
1. Let us C by Yashwant Kanetkar 2. Programming in C by Reema Thareja; Oxford University Press, New Delhi						

Diploma in Computer Science and Engineering						
Semester: II			Course Category: PC			
Course Code:	Course		Period / Week			Credit
			L	T	P	C
DCSPC104	INTRODUCTION TO CYBER SECURITY		3	0	0	3
Prerequisite	After completion of the course, students are able to -					Bloom's Level
Course Outcome	CO1	<i>Understand the fundamental concepts, importance, and scope of cybersecurity in the modern digital world.</i>			K₂,K₃	
	CO2	<i>Identify different types of cyber threats, vulnerabilities, and attack methods used by malicious actors.</i>			K₁,K₃	
	CO3	<i>Demonstrate basic knowledge of cybersecurity tools and technologies such as firewalls, antivirus, cryptography, and authentication mechanisms.</i>			K₁,K₃	
	CO4	<i>Apply basic security principles to networks, systems, and applications to ensure confidentiality, integrity, and availability.</i>			K₁,K₄	
	CO5	<i>Recognize the role of cybersecurity policies, legal frameworks, and ethical practices in protecting information systems</i>			K₁,K₂,K₃	
UNIT – I	Cybersecurity Basics					Contact Hours: 08
Definition and Importance of Cybersecurity, History and Evolution of Cybersecurity, CIA Triad: Confidentiality, Integrity, Availability, Types of Cybersecurity (Network, Application, Cloud, etc.), Importance of cybersecurity in the digital world, Cyber laws and ethics.					CO1	
UNIT – II	Cyber Threats, Attacks & Vulnerabilities					Contact Hours: 08
Malware (virus, worm, trojan, ransomware), Phishing, Spoofing, social engineering, Network attacks: DoS, DDoS, sniffing, System and application vulnerabilities, SQL Injection, Cross Site Scripting (XSS), Case Studies: Real-world Cyber Attacks.					CO2	
UNIT – III	Security Tools & Technologies					Contact Hours: 08
Firewalls and Antivirus Software, Intrusion Detection and Prevention Systems (IDS/IPS), Virtual Private Networks (VPNs), Cryptography Basics: Symmetric vs Asymmetric, Public Key Infrastructure (PKI), Digital Signatures, Secure Socket Layer (SSL)/Transport Layer Security (TLS).					CO3	
UNIT – IV	Network & System Security					Contact Hours: 08
Basics of Computer Networks and OSI Model, Network Security Protocols (IPSec, HTTPS, SSH), Securing Wireless Networks (WPA/WPA2,), Operating System Security (Windows, Linux Security Basics), Secure Configuration and Backup Strategies.					CO4	
UNIT – V	Cybersecurity Practices & Careers					Contact Hours: 08
Security policies and incident response, Risk management fundamentals, Careers in cybersecurity, Future trends: IoT, AI in cybersecurity, blockchain security					CO5	
Lecture Hours: 40			Tutorials Hours:00		Total: 40	
Reference Books:						
<ol style="list-style-type: none"> 1. Computer Security: Principles and Practice” – William Stallings 2. “Cybersecurity Essentials” – Charles J. Brooks 						

Diploma in Computer Science and Engineering					
Semester: II			Course Category: BS		
Course Code	Course	Period / Week			Credit
		L	T	P	C
DBS110	Applied Chemistry Lab	0	0	2	1
Prerequisite	<i>At the end of this course, the students will be able to:</i>				
Course Outcome	CO1	<i>Total hardness of water can be estimated by titrating a sample of water with EDTA salt solution in presence of NH₄Cl–NH₄OH</i>			
	CO2	<i>The alkalinity of water can be determined by titrating the water sample with Sulphuric acid of known values of pH, volume and concentration.</i>			
	CO3	<i>Proximate analysis determines fixed carbon, volatile matter, moisture, and ash content, while ultimate analysis identifies the carbon, hydrogen, nitrogen, sulphur, and oxygen composition of solid fuels.</i>			
	CO4	<i>The permanent hardness of water can be removed by O' Hener's Method.</i>			
	CO5	<i>We can easily determined the flash and fire point of given lubricant oil by using Able's flash point apparatus..</i>			
List of experiment					
CO 1	1. Estimation of total hardness of water using standard EDTA solution.				
	2. Calibration of Analytical Apparatus.				
CO 2	3. Estimation of total alkalinity of the given water sample by titrating it against standard sulfuric acid solution.				
CO 3	4. Proximate analysis of solid fuel.				
	5. Preparation of Standard Solution of KMnO ₄ or NaCl.				
CO 4	6. Estimation of temporary hardness of water sample by O'Hener's Method.				
	7. Determination of the Viscosity of a given solution by a Viscometer.				
CO 5	8. Determination of flash and fire point of given lubricating oil using Able's flash point apparatus.				
	9. Determination of surface tension of a given liquid by the Stalagmometer.				

Diploma in Computer Science and Engineering					
Semester: II			Course Category: ES		
Course Code	Course	Period/Week			Credit
		L	T	P	C
DES118	ADVANCED EXCEL LAB	-	-	2	1
Prerequisite	<i>At the end of this course, the students will be able to:</i>				
Course Outcome	CO1	<i>Ability to create and format Excel tables for data management.</i>			
	CO2	<i>Apply basic Excel formulas to calculate totals, averages.</i>			
	CO3	<i>Learn different types of Functions and Formulas</i>			
	CO4	<i>To understand visualize data using charts and PivotTables</i>			
	CO5	<i>To understand how manage multiple worksheets, and protecting sheets.</i>			
<u>LIST OF PRACTICALS</u>					
1. Create a Student Marks Sheet with columns: Name, Roll No, Subject, Marks.					CO1
2. Use AutoFill & Flash Fill to complete a sequence.					
3. Create a student marks sheet and use SUM, AVERAGE, MAX, MIN, COUNT functions.					CO2
4. Use Find & Replace and Data Validation (dropdown list, number restrictions).					
5. Use Text functions (LEFT, RIGHT, MID, LEN, TRIM, CONCATENATE/TEXTJOIN) to format names.					CO3
6. Apply Date and Time functions (TODAY, NOW, DATEDIF, NETWORKDAYS) to calculate age, due dates, and working days.					
7. Create a Column Chart for month salary.					CO4
8. Create a Bar Chart for Student marks.					
9. Create a Pie Chart for sales distribution among products.					CO5
10. Protect worksheet & workbook with a password and restrict editing of specific cells.					

Diploma in Computer Science and Engineering					
Semester: II			Course Category: PC		
Course Code	Course	Period/Week			Credit
		L	T	P	C
DCSPC106	CONCEPT OF PROGRAMMING USING C LAB	-	-	2	1
Prerequisite	<i>At the end of this course, the students will be able to:</i>				
Course Outcome	CO1	<i>Identify the problem and formulate an algorithm for it. Identify various control structures and implement them</i>			
	CO2	<i>Identify various types of variables. Use pointer in an array and structure. Use structures and union for handling data.</i>			
	CO3	<i>Explain the concepts of C programming language Explain and implement the language constructs concepts</i>			
	CO4	<i>Install C software on the system and debug the program, Explain and execute member functions of C in the program.</i>			
	CO5	<i>Describe and implement array concept in C program, Describe and execute pointers, Expose File System using File Handling.</i>			
LIST OF PRACTICAL					
1. Programming exercises on executing and editing a C program. 2. Programming exercises on defining variables and assigning values to variables. 3. Programming exercises on arithmetic, logical, and relational operators.					CO1
4. Programming exercises on arithmetic expressions and their evaluation. 5. Programming exercises on formatting input/output using printf and scanf, and their return type values. 6. Programming exercises using the if statement. 7. Programming exercises using if-else.					CO2
8. Programming exercises on the switch statement. 9. Programming exercises on while and do-while statement. 10. Programming exercises on the for statement.					CO3
11. Simple programs using functions and recursive functions. 12. Programs on a one-dimensional array. 13. Programs on a two-dimensional array. 14. Programs for concatenation two strings together. 15. Programs for comparing two strings.					CO4
16. Simple programs using pointers. 17. Simple programs using structures. 18. Simple programs using union.					CO5

Diploma in Computer Science and Engineering					
Semester: II			Course Category: PC		
Course Code	Course	Period/Week			Credit
		L	T	P	C
DCSPC108	INTRODUCTION TO CYBER SECURITY LAB	-	-	2	1
Prerequisite	<i>At the end of this course, the students will be able to:</i>				
Course Outcome	CO1	<i>Understand the fundamental concepts, importance, and scope of cybersecurity in the modern digital world.</i>			
	CO2	<i>Identify different types of cyber threats, vulnerabilities, and attack methods used by malicious actors.</i>			
	CO3	<i>Demonstrate basic knowledge of cybersecurity tools and technologies such as firewalls, antivirus, cryptography, and authentication mechanisms.</i>			
	CO4	<i>Apply basic security principles to networks, systems, and applications to ensure confidentiality, integrity, and availability.</i>			
	CO5	<i>Recognize the role of cybersecurity policies, legal frameworks, and ethical practices in protecting information systems</i>			
LIST OF PRACTICAL					
1. Study and Use of Antivirus Software. 2. Identify and Analyze Phishing Emails.					CO1
3. Network Traffic Monitoring Using Wireshark. 4. Creating and Managing Strong Passwords.					CO2
5. Using a Firewall to Block/Allow Applications. 6. Exploring Social Engineering Techniques.					CO3
7. Creating a Basic Cybersecurity Policy. 8. Understanding Encryption and Decryption.					CO4
9. Exploring Secure Web Browsing Practices. 10. Secure File Sharing Practices.					CO5