

Faculty of Engineering and Technology P. K. University Shivpuri (MP)



**Evaluation Scheme & Syllabus for
Department of Computer Science Engineering & IT
Diploma CS I Year
(Ist Semester)
(Effective from session 2025-26)**

Faculty of Engineering and Technology
P. K. University Shivpuri (MP)
Evaluation Scheme & Syllabus for
Department of Computer Science Engineering & IT
Diploma CS I Year
(I & II Semester)
(Effective from session 2025-26)

STUDY AND EVALUATION SCHEME FOR DIPLOMA PROGRAMME IN COMPUTER SCIENCE AND ENGINEERING						
FIRST SEMESTER						
Sr.	SUBJECT CODE	SUBJECTS	STUDY	Credit	MARKS IN EVALUATION SCHEME	Total

No			SCHEME				INTERNAL			EXTERNAL					Marks of Internal & External
			Periods/Week				ASSESSMENT			ASSESSMENT					
			L	T	P			Th	Pr	Tot	Th	Hrs	Pr	Hrs	
1.1	DCOMMCO101	*Communication Skill-I	3	-	-	3	30		30	70	3			70	100
1.2	DAPPLCO102	*Applied Mathematics-I	4	-	-	4	30		30	70	3			70	100
1.3	DAPPLCO103	*Applied Physics-I	3	-	-	3	30		30	70	3			70	100
1.4	DAPPLCO104	*Applied Chemistry	3	-	-	3	30		30	70	3			70	100
1.5	DFUNDCO105	Fundamentals of Computer and Information Technology	3	-	-	3	30		30	70	3			70	100
1.6	DTECHCO106	Technical Drawing	-	-	6	2	30		30	70	3			70	100
1.7	DWORKCO107	Workshop Practice	-	-	4	2	-	25	25	-	-	25		50	50
1.8	DCOMMCO108	*Communication Skill-I LAB			2	1		25	25			25		50	50
1.9	DAPPLCO109	*Applied Physics-I LAB			2	1		25	25			25		50	50
1.10	DAPPLCO110	*Applied Chemistry LAB			2	1		25	25			25		50	50
1.11	DFUNDCO111	Fundamentals of Computer and Information Technology LAB			4	2		25	25			25		50	50
		Total	16		20	25	180	125	305	420	18	125		670	850
		* Common course with other diploma programmes.#	Student Centred Activities will comprise of co-curricular activities like extension lectures, games, hobby clubs e.g.												
		photography etc., seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities. self study etc.													

DCOMMCO101 COMMUNICATION SKILLS – I

L	T	P
3	-	-

RATIONALE

Knowledge of English Language plays an important role in career development. This subject aims at introducing basic concepts of communication besides laying emphasis on developing listening, speaking, reading and writing skills as parts of Communication Skill.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Understand the importance of effective communication
- Describe the process of communication
- Communicate effectively in different contexts
- Identify parts of speech
- Write correct sentences using appropriate vocabulary
- Reproduce and match words and sentences in a paragraph
- Write various types of paragraphs, notices for different purposes and composition on picture with appropriate format
- Read unseen texts with comprehension

DETAILED CONTENTS

1 Basics of Communication (13 periods)

- 1.1 Definition and process of communication
- 1.2 Types of communication - formal and informal, oral and written, verbal and non-verbal
- 1.3 Communications barriers and how to overcome them
- 1.4 Barriers to Communication, Tools of Communication

2 Application of Grammar (18 periods)

- 2.1 Parts of Speech (Noun, verb, adjective, adverb) and modals
- 2.2 Sentences and its types
- 2.3 Tenses
- 2.4 Active and Passive Voice
- 2.5 Punctuation
- 2.6 Direct and Indirect Speech

3 Reading Skill (10 periods)

Unseen passage for comprehension (one word substitution, prefixes, suffixes, antonyms, synonyms etc. based upon the passage to be covered under this topic)

4 Writing Skill (15 periods)

- 4.1 Picture composition
- 4.2 Writing paragraph
- 4.3 Notice writing

RECOMMENDED BOOKS

Communicating Effectively in English, Book-I by Revathi Srinivas; Abhishek Publications, Chandigarh.

Communication Techniques and Skills by R. K. Chadha; Dhanpati Publications, New Delhi.

High School English Grammar and Composition by Wren & Martin; S. Chand & Company Ltd., Delhi.

Excellent General English-R.B.Varshnay, R.K. Bansal, Mittal Book Depot, Malhotra

The Functional aspects of Communication Skills – Dr. P. Prasad, S.K. Katria & Sons,
New Delhi

Q. Skills for success – Level & Margaret Books, Oxford University Press.

e-books/e-tools/relevant software to be used as recommended by AICTE/ NITTTR, Chandigarh.

Websites for Reference:

[http://www.mindtools.com/](http://www.mindtools.com/page 8.html) page 8.html – 99k

<http://www.letstalk.com.in>

<http://www.englishlearning.com>

<http://learnenglish.britishcouncil.org/en/>

<http://swayam.gov.in>

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	13	24
2	18	32
3	10	16
4	15	28
Total	56	100

DAPPLCO102 APPLIED MATHEMATICS - I

L	T	P
4	-	-

RATIONALE

Contents of this course provide fundamental base for understanding elementary mathematics and their uses in solving engineering problems. Contents of this course will enable students to use basic mathematical function like logarithms, partial fractions, matrices and basic 2D, curves in solving various engineering problems of all fields.

LEARNING OUTCOMES

After undergoing this course, the students will be able to:

- apply Binomial theorem to solve engineering problems
- apply determinants properties and Crammer's rule to solve engineering problems
- apply dot & cross product of vectors to find the solution of engineering problems
- use complex numbers in various engineering problems
- apply differential calculus and higher order to solve engineering problems
- find velocity, acceleration, errors and approximation in engineering problems with application of derivatives.

DETAILED CONTENTS

1. Algebra -I (12 Periods)

1.1 Series : AP and GP; Sum, nth term, Mean

1.2 Binomial theorem for positive, negative and fractional index (without proof). Application of Binomial theorem.

1.3 Determinants : Elementary properties of determinant of order 2 and 3, Multiplication system of algebraic equation, Crammer's rule Consistency of equation,

2. Algebra- II (12 Periods)

2.1 Vector algebra : Dot and Cross product, Scaler and vector triple product. 2.2 Complex number. Complex numbers, Representation, Modulus and amplitude

Demoivre theorem, its application in solving algebraic Mod. function and its properties..equations,

3. Trigonometry (10 Periods)

3.1 Relation between sides and angles of a triangle : Statement of various formulae showing relationship between sides and angle of a triangle.

3.2 Inverse circular functions : Simple case only

4. Differential Calculus - I (18 Periods)

4.1 Functions, limits, continuity, - functions and their graphs, range and domain, elementary methods of finding limits (right and left), elementary test for continuity and differentiability.

4.2 Methods of finding derivative, Trigonometric functions, exponential

function, Function of a function, Logarithmic differentiation, Differentiation of Inverse trigonometric function, Differentiation of implicit functions.

5. Differential Calculus - II (18 Periods)

5.1 Higher order derivatives, Leibnitz theorem (without proof). Simple applications.

5.2 Application - Finding Tangents, Normal, Points of

Maxima/Minima, Increasing/Decreasing functions, Rate, velocity, Acceleration, Errors and approximation.

INSTRUCTIONAL STRATEGY Measure,

The basic instructional strategy to teach basic mathematics, Binomial theorem, trigonometry, differential equations etc. should be conceptual with real world applications of relevant branch. More numerical and theory examples can be used for clear

understanding of the content.

MEANS OF ASSESSMENT

Assignments and Quiz/Class Tests Mid-term and End-term Written Tests Model/Prototype Making

RECOMMENDED BOOKS

Elementary Engineering Mathematics by BS Grewal, Khanna Publishers, New Delhi

Engineering Mathematics, Vol I & II by SS Sastry, Prentice Hall of India Pvt. Ltd.,

Applied Mathematics-I by Chauhan and Chauhan, Krishna Publications, Meerut.

Applied Mathematics-I (A) by Kailash Sinha and Varun Kumar; Aarti Publication, Meerut

SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Periods)	Marks Allotted (%)
1.	12	20
2.	12	20
3.	10	12
4	18	24
5	18	24
Total	70	100

DAPPLCO103 APPLIED PHYSICS – I

L	T	P
3	-	-

RATIONALE

Applied physics includes the study of a diversified topics related to the world around us. It aims to give an understanding of this world both by observation and by prediction of the way in which objects behave. Concrete knowledge of physical laws, analysis and applications in various fields of engineering and technology are given prominence in this course content.

Note: Teachers should give examples of engineering/technology applications of various concepts and principles in each topic so that students are able to learn and appreciate these concepts and principles. In all contents, SI units should be followed.

LEARNING OUTCOMES

After undergoing this course, the students must be able to:

- ☐ Identify the use of S.I. system of measurement with accuracy and how it is used in engineering
- ☐ Represent physical quantities as scalars and vectors, applying the physical laws and concepts of linear and circular motion in everyday life.
- ☐ Solve difficult problems (walking of man, horse and cart problem, flying of bird/ aircraft, etc.)
- ☐ Analyse and design banking of roads/railway tracks and apply conservation of momentum principle to Explain rocket propulsion, recoil of gun etc.
- ☐ Derive work, power and energy relationship and solve problems about work and power.
- ☐ Define work, energy and power and their units.
- ☐ Describe conservation of energy and its applications
- ☐ Understand the concept of rotational motion of a rigid body and its applications
- ☐ Apply the physical laws and concepts of gravity, its variation with longitude and latitude and its uses in space satellite etc. .
- ☐ Understand the concept of elasticity, surface tension, pressure and the laws governing movement of fluids.
- ☐ Express physical work in term of heat and temperature; Measure temperature in various processes on different scales (Celsius, Kelvin, Fahrenheit etc.)
- Distinguish between conduction, convection and radiation, identify the different methods for reducing heat losses
- Understand the laws of thermodynamics, Carnot cycle and their applications.

DETAILED CONTENTS

1. Units and Dimensions (10 Periods)

Need of Measurement in engineering and science, unit of a physical quantities - fundamental and derived units, systems of units (FPS, CGS and SI units)

Dimensions and dimensional formulae of physical quantities.

Principle of homogeneity of dimensions

Dimensional equations and their applications, conversion of numerical values of physical quantities from one system of units into another, checking the correctness of physical equations and deriving relations among various physical quantities

Limitations of dimensional analysis

Error in measurement, accuracy and precision of instruments, random and systematic errors, absolute error, relative error, and percentage error, Estimation of probable errors in the results of measurement (combination of errors in addition, subtraction, multiplication, division and powers), rules for representing significant figures in calculation.

Application of units and dimensions in measuring length, diameter,

circumference, volume, surface area etc. of metallic and non metallic blocks, wires, pipes etc (at least two each).

2. Force and Motion (10 periods)

Scalar and vector quantities – examples, representation of vector, types of vectors

Addition and Subtraction of Vectors, Triangle and Parallelogram law

(Statement only), Scalar and Vector Product.

Resolution of Vectors and its application to lawn roller.

Force, Momentum, Statement and Derivation of Conservation of linear momentum, its applications such as recoil of gun.

Impulse and its Applications

Circular motion (Uniform and Non-uniform), definition of angular displacement, angular velocity, angular acceleration, frequency, time period.

Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical)

Central force, Expression and Applications of Centripetal and centrifugal forces with examples such as banking of roads and bending of cyclist, Principle of centrifuge.

Application of various forces in lifts, cranes, large steam engines and turbines

3. Work, Power and Energy (10 periods)

Work: and its units, examples of zero work, positive work and negative work, conservative and non-conservative force,

Friction: modern concept, types, laws of limiting friction, Coefficient of friction and its Engineering Applications.

Work done in moving an object on horizontal and inclined plane for rough and plane surfaces with its applications

Energy and its units: Kinetic energy and potential energy with examples and their derivation, work energy theorem.

Principle of conservation of mechanical energy for freely falling bodies, examples of transformation of energy.

Power and its units, calculation of power in numerical problems

Application of Friction in brake system of moving vehicles, bicycle, scooter, car trains etc.

4 Rotational Motion (10 periods)

Concept of translatory and rotatory motions with examples

Definition of torque with examples

Angular momentum, Conservation of angular momentum (quantitative) and its examples

Moment of inertia and its physical significance, radius of gyration for rigid body, Theorems of parallel and perpendicular axes (statements only), Moment of inertia of rod, disc, ring and sphere (hollow and solid) (Formulae only). Concept of Fly wheel.

Rotational kinetic energy, Rolling of sphere on the slant plane,

Comparison of linear motion and rotational motion.

Application of rotational motions in transport vehicles, and machines

5 Motion of planets and satellites (08 periods)

5.1 Gravitational force, Kepler's law of planetary motion,

5.2 Acceleration due gravity and its variation,

5.3 Gravitational Potential and Gravitational potential energy,

5.4 Motion of satellite, orbital velocity and time period of satellite, Total energy and Binding energy of a satellite, Escape energy and escape velocity,

5.5 Types of satellites, Geo-stationary satellite, semi-synchronous, polar satellite (concept only) and their uses in science and technology,

5.6 Concept of Black Holes,

6. Properties of Matter (12 periods)

Elasticity: definition of stress and strain, different types of moduli of elasticity, Hooke's law, significance of stress strain curve

Pressure: definition, its units, atmospheric pressure, gauge pressure, absolute pressure, Fortin's Barometer and its applications

Surface tension: concept, its units, angle of contact, Capillary action and determination of surface tension from capillary rise method, applications of surface tension, effect of temperature and impurity on surface tension

Viscosity and coefficient of viscosity: Terminal velocity, Stoke's law and effect of temperature on viscosity, application in hydraulic systems.

Concept of fluid motion, stream line and turbulent flow, Reynold's number Equation of continuity, Bernoulli's Theorem and their applications.

7. Heat and Thermodynamics (10 periods)

Difference between heat and temperature

Modes of transfer of heat (Conduction, convection and radiation with examples)

Different scales of temperature and their relationship

Expansion of solids, liquids and gases, coefficient of linear, surface and cubical expansions and relation amongst them

Heat conduction in a metal rod, Temperature gradient, Concept of Co-efficient of thermal conductivity, Uses and effects of Heat conduction in Daily life.

Isothermal and Adiabatic process

Zeroth, First and second law of thermodynamics, Heat engine (concept Only), Carnot cycle.

Application of various systems of thermometry in refrigeration and air-conditioning etc.

RECOMMENDED BOOKS

Text Book of Physics for Class XI (Part-I, Part-II); N.C.E.R.T., Delhi

Concepts in Physics by HC Verma, Vol. I & II, Bharti Bhawan Ltd. New Delhi Comprehensive Practical Physics, Vol, I & II, JN Jaiswal, Laxmi Publications (P) Ltd., New Delhi

B.Sc. Practical Physics by C L Arora, S. Chand Publication..

Engineering Physics by PV Naik, Pearson Education Pvt. Ltd, New Delhi

Engineering Physics by DK Bhattacharya & Poonam Tandan; Oxford University Press, New Delhi

Modern Engineering Physics by SL Gupta, Sanjeev Gupta, Dhanpat Rai Publications

V. Rajendran, physics-I, Tata McGraw-Hill raw Hill publication, New Delhi

Arthur Beiser, Applied Physics, Tata McGraw-Hill raw Hill publication, New Delhi

Physics Volume 1, 5th edition, Haliday Resnick and Krane, Wiley publication

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	10	15
2	10	15
3	10	15
4	10	15
5	08	10
6	12	16
7	10	14
Total	70	100

<i>L</i>	<i>T</i>	<i>P</i>
3	-	-

RATIONALE

The use of various chemicals and chemical products in diverse technical and engineering fields have repeatedly proved the importance of Applied Chemistry, which enhances its role to a new peak. On the other hand, ever increasing use of such materials will compel engineers, technocrats to acquire essential applied chemistry knowledge in order to select engineering materials, which not only suit them but also provide more environmental compatibility. This situation demands principles of Applied Chemistry in diploma-engineering courses. Principles of Applied Chemistry will enable budding engineers and technocrats to develop scientific temper and appreciate physical, chemical and engineering properties of materials. Hence the subject of Applied Chemistry.

LEARNING OUTCOMES

After undergoing this subject, the student will be able to:

- Classify various substances based on state of aggregation
- Substantiate the laws and principles on which structure of atom is established.
- Explain and predict properties of substances.
- Explain sources of water and various characteristics of water (quantitatively).
- Explain cause and factors which can adversely affecting natural water quality and remedial measures available for water purification
- Think critically, develop and adapt water conservation techniques.
- Explain corrosion of metal and their preventive measures.
- explain chemical nature and causes of corrosion
- apply correct and efficient methods of corrosion prevention.
- explain chemistry of fuels and their relative advantages.
- select most efficient fuel for the engine and engineering applications.
- suggest how to subside air pollution caused by the use of fossil fuels
- explain the chemistry of various polymers and plastics
- verify suitability and select polymer/rubber/plastic materials for engineering applications.

DETAILED CONTENTS**1. Atomic Structure, Periodic Table and Chemical Bonding (14 periods)**

Fundamental particles- mass and charges of electrons, protons and neutrons with names of the scientists who discovered these fundamental particles.

Bohr's model of atom and successes and limitations of atomic theory (qualitative treatment only).

Atomic number, atomic mass number isotopes and isobars.

Definition of orbit and orbitals, shapes of s and p orbitals only, quantum numbers and their significance, Aufbau's principle, Pauli's exclusion principle and Hund's rule electronic configuration of elements with atomic number (Z) = 30 only. (Electronic configurations of elements with atomic number greater than 30 are excluded).

Modern periodic law and periodic table, groups and periods, classification

of elements into s, p, d and f blocks (periodicity in properties - excluded) Chemical bonding and cause of bonding and types such as ionic bond in NaCl sigma (σ) and pi (π) covalent bonds in H_2 , HCl, Cl_2 , elementary idea of hybridization in $BeCl_2$, BF_3 , CH_4 , NH_3 and H_2O , VSEPR, Molecular orbital Theory

States of Matter: Solid, Liquid & Gas, Metallic bonding- explanation with the help of electron gas (sea) model.

2. Fuels and Lubricants (18 periods)

Definition of fuel, classification of fuels, characteristics of good fuel, relative merits of gaseous, liquid and solid fuels

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

Fuel rating – Octane number and Cetane number, fuel-structural influence on Octane and Cetane numbers

Gaseous fuels – chemical composition, calorific value and applications of natural gas (CNG), LPG, producer gas, water gas and biogas.

Elementary ideal on – hydrogen as future fuels, nuclear fuels. Lubricants: Definition and properties, mechanism, industrial application and its function in bearings.

Synthetic lubricants and cutting fluids.

3. Water (14 periods)

Demonstration of water resources on Earth using pie chart.

Classification of water – soft water and hard water, action of soap on hard water, types of hardness, causes of hardness, units of hardness – mg per liter (mgL^{-1}) and part per million (ppm) and simple numerical, pH and buffer solutions and their applications.

Disadvantages caused by the use of hard water in domestic and boiler feed

water. Priming and foaming and caustic embrittlement in boilers. Removal of hardness -Permutit process and Ion-exchange process. Physico-Chemical methods for Water Quality Testing

a) Determination of pH using pH meter, total dissolved solids (TDS)

b) Testing and Estimation of- alkalinity, indicator their types and application

total hardness by EDTA method and O'Hener's Method. (chemical reaction of EDTA method are excluded).

c) Understanding of Indian Water Quality standards as per WHO

Natural water sterilization by chlorine and UV radiation and reverse osmosis.

Municipality waste water treatment. Definition of B.O.D and C.O.D.

4. Electrochemistry (4 periods)

Redox Reaction, Electrode Potential, Nernst equation, Electrochemical cell (Galvanic and Electrolytic); Nernst equation.

5. Corrosion and its Control (10 periods)

Definition of corrosion and factors affecting corrosion rate.

Theories of

Dry (chemical) corrosion- Pilling Bedworth rule

Wet corrosion in acidic atmosphere by hydrogen evolution mechanism

Definition of passivity and galvanic series Corrosion control:

Metal coatings – Cathodic protection, Cementation on Base Metal Steel –Application of Metal Zn (Sheradizing), Cr (Chromozing) and Al (Aluminizing), Sacrificial protection and impressed current voltage

Inorganic coatings – Anodizing and phosphating,

Organic coatings - use of paints varnishes and enamels

Internal corrosion preventive measures- alloying (with reference to passivating, neutralizing and inhibition) and heat treatment (quenching, annealing)

6. Organic compounds, Polymers and Plastics (10 periods)

Classification of organic compounds and IUPAC Nomenclature

Definition of polymer, monomer and degree of polymerization

Brief introduction to addition and condensation polymers with suitable examples (PE, PS, PVC, Teflon, Nylon -66 and Bakelite)

Definition of plastics, thermo plastics and thermo setting plastics with

suitable examples, distinctions between thermo and thermo setting plastics Applications of polymers in industry and daily life

RECOMMENDED BOOKS

Chemistry in Engineering by J.C. Kuricose & J. Rajaram, Tata McGraw Hill, Publishing Company Limited, New Delhi.

Engineering Chemistry by P.C. Jain & Monika Jain, Dhanapat Rai Publishing Company, New Delhi.

Eagle's Applied Chemistry - I by S. C. Ahuja & G. H. Hugar, Eagle Prakashan, Jalandhar.

Engineering Chemistry – A Text Book by H. K. Chopra & A. Parmar, Narosa Publishing House, New Delhi.

Applied Chemistry - I by Dr. P. K Vij & Shiksha Vij, Lords Publications, Jalandhar.

Engineering Chemistry by Dr. Himanshu Pandey, Goel Publishing House, Meerut, India

e-books/e-tools/relevant software to be used as recommended by AICTE/ NITTTR, Chandigarh.

SUGGESTED DISTRIBUTION OF MARKS

Topics	Time Allotted (hrs)	Marks Allotted (%)
1.	14	20
2.	18	24
3.	14	20
4.	4	6
5.	10	15
6.	10	15
Total	70	100

DFUNDCO105 FUNDAMENTALS OF COMPUTER AND INFORMATION TECHNOLOGY

<i>L</i>	<i>T</i>	<i>P</i>
3	-	-

RATIONALE

The diploma holders in Computer Engineering needs to understand computer fundamentals and information technology. They should be able to operate basic software related to computer. Hence this subject is introduced in the curriculum.

LEARNING OUTCOMES

After undergoing the subject, the students 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.
- Outline various application of IT
- Differentiate between assembly and high level language
- Identify various web browser
- Use the Internet to send mail and surf the World Wide Web

DETAILED CONTENTS

1. Fundamentals of Computer (12 Periods)

Historical evolution of computers, Generations of computers, Classification of computers - based on size, processor, Usefulness of Computers. Applications of computers, Block Diagram along its components and characteristics, Interaction between the CPU, Memory Input/output devices, function of CPU and major functional parts of CPU. State the relevance of speed and word length for CPU Performance, Recognize the current family of CPUs used in Computers, Types of Memory- RAM ROM, Monitor, Mouse, Keyboard, Disk, joysticks, Storage Devices, floppy disk, CD, DVD, Pen drive, trackballs, Printers Types of printers, Scanner, Modem, Video, Sound cards, Speakers

2. Data Representation (08 Periods)

Definition Of Information, difference between data and information ,importance of Binary Number System, various number systems, Conversion from Decimal to Binary, Conversion from Binary to Decimal, binary number into hexadecimal number, hexadecimal number into binary number System, Memory Addressing and its Importance, ASCII and EBCDIC coding System

3. DOS & Windows Operating Systems (10 Periods)

Hardware and Software, Types of Softwares, Introduction and need of operating system, Types of operating system, dos operating system, Types of dos Commands, operating system as a resource manager; BIOS; System utilities - Editor, Loader, Linker, File Manager. Concept of GUI and CUI standards. Directories and files , wild cards, autoexec.bat, config.says, features of Window desktop, components of Window, function of each component of Window, method of starting a program using start button, Understand maximize, minimize, restore down and close button, uses of file and folder, method of viewing the contents of hard disk drive using explore option, control panel, disk defragmentation installation and un installation of the application software.

4. Fundamentals of Internet (12 Periods)

Concepts of computer Network, Client Server Model, Peer to Peer Model, Networking Devices: Switch, Router, Hub, Bridge, Gateway, LAN, MAN, WAN, Topology, Internet, Intranet, Extranet, internet service provider and its relevance, role of the modem in accessing the internet, installation procedure of a modem using control panel, purpose of web browser software, URL, URI, URN, WWW, FTP, HTTP, RDC (Remote Desktop Connection), Telnet, Email, process of sending and receiving e-mail, transmission modes, IP address and its format, MAC Address, DNS, search engines, social network sites, internet security, Firewall, Cloud Computing and its services

RECOMMENDED BOOKS

1. Fundamentals of Computer by E Balagurusamy, Tata McGraw Hill Education Pvt. Ltd, New Delhi
2. Fundamentals of Computer by V Rajaraman; Prentice Hall of India Pvt. Ltd., New Delhi
3. Computer Fundamentals by RS Salaria; Khanna Book Publishing Co. (P) Ltd., New Delhi
4. Computers Today by SK Basandara, Galgotia publication Pvt Ltd. Daryaganj, New Delhi.
5. Computer Fundamentals and Programming in C by Reema Thareja; Oxford University Press, New Delhi
5. Computer Fundamentals by PK Sinha; BPB Publication, New Delhi
6. e-books/e-tools/relevant software to be used as recommended by AICTE/UPBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

<http://spoken-tutorial.orgs>

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	12	30
2	08	20
3	10	25
4	12	25
Total	42	100

DTECHCO106 TECHNICAL DRAWING

L	T	P
-	-	6

RATIONALE

The course is aimed at developing basic graphic skills so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation. Understand the fundamentals of Engineering Drawing. Read and interpret object drawings.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Draw orthographic projections of different objects.
- Visualize three dimensional objects and draw Isometric Projections.
- Use the techniques and able to interpret the drawing in Engineering field.
- Draw exploded views of components & assemblies in preparation of service drawing.
- Draw free hand sketches of the schematic diagrams of electronic circuits, using standard symbols.
- Prepare drawing from the rough sketches provide and/or enlarge/reduce the given drawing to the desired scale.

DETAILED CONTENTS

1. 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. Geometrical constructions.

2. Active Devices

Semiconductor : Rectifier diode, Zener diode, Varactor diode, Tunnel diode, Photo, Light emitting diode (LED), Bipolar transistor, junction field effect transistor (JFET), Mosfet, Photo transistor, Uni junction transistor (UTJ), Silicon control rectifier (SCR), Diac, Triacs outlines (with their types numbers e.g TO3, TO5, TO18, TO39, TO65 etc) of the different types of semiconductor diodes, Transistors Scrs, Diacs, Triacs and ICs (along with indicators for pin identification etc.)

3. Orthographic projections

Introduction to Orthographic projections. Conversion of pictorial view into Orthographic, Views (First Angle Projection Method Only), Dimensioning technique as per SP-46

4. 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)

5. Logic gates(With the help of rough sketch/clues given)

Draw standard symbols of NOT, AND, NAND, OR, NOR XOR, Expandable & Tristate gates, Op, Amp, Ic, Flip-flops (Combination of 2,3,4 input gates should be drawn).

6. Graphical Representation of data

General concept, selection of variables & curve fitting, curve identification zero-point location. Use of various graph paper and preparation of diagram from given data. Bar charts, pie graph, pictorial graph.

7. Circuit Diagram(With the help of rough sketch/clues given)

Circuit of UPS, Block diagram of an Electronic multimeter, Circuit of Modem, Circuit diagram of Voltage stabilizers, Connection wiring diagrams, Point to point pictorial, P.C.B layout of a single electronic circuit on a graph sheet. Keeping in view the actual size of the components.

INSTRUCTIONAL STRATEGY

Teacher should show model of realia of the component/part whose drawing is to be made. Emphasis should be given on cleanliness, dimensioning and layout of sheet. Focus should be on proper selection of drawing instruments and their proper use. Students must use H grade pencils for the first few (10 sheets), till they are familiar with the proper thickness of all type of lines. Relevant IT tools to be used to state that 3D solid modelling, which is to be taught at the starting point. Also how 2D views can be obtained from 3D solid modelling to 2D views rather than the conventional method of making the students visualize the 3D view of an object by mentally constructing it from the 2D views

MEANS OF ASSESSMENT

Drawing

Assignments and quiz/class tests Mid-term and end-term written tests

RECOMMENDED BOOKS

1. A Text Book of Engineering Drawing by Surjit Singh; Dhanpat Rai & Co., Delhi
2. Engineering Drawing by PS Gill; SK Kataria & Sons, New Delhi
3. Elementary Engineering Drawing in First Angle Projection by ND Bhatt; Charotar Publishing House Pvt. Ltd., Anand
4. Engineering Drawing I & II by JS Layall; Eagle Parkashan, Jalandhar
5. Engineering Drawing I by DK Goel, GBD Publication.
6. e-books/e-tools/relevant software to be used as recommended by AICTE/UPBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

<http://spoken-tutorial.org>

DWORKCO107 WORKSHOP PRACTICE

(Common for Computer Science and Engineering and Information Technology)

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RATIONALE

In order to have a balanced overall development of diploma engineers, it is necessary to integrate theory with practice. General workshop practices are included in the curriculum in order to provide hands-on experience about use of different tools and basic manufacturing practices. This subject aims at developing general manual and machining skills in the students. In addition, the development of dignity of labour, safety at work place, team working and development of right attitude are the other objectives.

LEARNING OUTCOMES

After completing the course, the students will be able to:

- Identify tools and equipment used and their respective functions.
- Identify different types of materials and their basic properties.
- Use and take measurements with the help of basic measuring tools/equipment.
- Select proper tools for a particular operation.
- Select materials, tools, and sequence of operations to make a job as per given specification/drawing.
- Prepare simple jobs independently and inspect the same.
- Follow safety procedures and precautionary measures.
- Use safety equipment and Personal Protection Equipment.

DETAILED CONTENTS (PRACTICAL EXERCISES)

Note: The students are supposed to come in proper workshop dress prescribed by the institute.

Wearingshoes in the workshop(s) is compulsory. Importance of safety and cleanliness, safety measures and upkeep of tools, equipment and environment in each of the following shops should be explained and practiced. The students should prepare sketches of various tools/jobs in their practical Notebook.

The following shops are included in the syllabus:

- 1 Fitting Shop
- 2 Sheet Metal Shop
- 3 Carpentry Shop
- 4 Painting and Polishing Shop

1. FITTING SHOP

- 1.1 Use of personal protective equipment and safety precautions while working.
 - 1.2 Basic deburring processes.
 - 1.3 Introduction to fitting shop tools, marking and measuring devices/equipment.
 - 1.4 Identification of materials. (Iron, Copper, Stainless Steel, Aluminium etc.)
 - 1.5 Identification of various steel sections (flat, angle, channel, bar etc.).
 - 1.6 Introduction to various fitting shop operations/processes (Hacksawing, Drilling, Chipping and Filing).
 - 1.7 Job Practice
- Job I Marking of job, use of marking tools, filing and use of measuring instruments. (Vernier caliper, Micrometer and Vernier height gauge).

Job II Filing a rectangular/square piece to maintain dimensions within an accuracy of ± 0.25 mm.

Job III Making a cut-out from a square piece of MS flat using hand hacksaw and chipping

Job IV Drilling and tapping practice on MS Flat.

2. SHEET METAL SHOP

2.1. Introduction to sheet metal shop, use of hand tools and accessories e.g. different types of hammers, hard and soft mallet, sheet and wire gauge, necessary allowance required during job fabrication, selection of material.

2.2 Introduction and demonstration of hand tools used in sheet metal shop.

2.3 Introduction and demonstration of various machines and equipment used in sheet metal shop e.g. Shearing Machine, Bar Folder, Burring Machine,

2.4 Introduction and demonstration of various raw materials used in sheet metal shop e.g. black-plain sheet, galvanized-iron plain sheet, galvanised corrugated sheet, aluminium sheet etc.

2.5 Study of various types of nuts, bolts, rivets, screws etc.

2.6 Job Practice

Job I: Shearing practice on a sheet using hand shears.

Job II: Practice on making Single riveted lap joint/Double riveted lap Joint.

Job III: Practice on making Single cover plate chain type, zig-zag type and single rivetted Butt Joint.

3. CARPENTRY SHOP

3.1 General Shop Talk

3.1.1 Name and use of raw materials used in carpentry shop : wood & alternative materials

3.1.2 Names, uses, care and maintenance of hand tools such as different types of Saws, C-Clamp, Chisels, Mallets, Carpenter's vices, Marking gauges, Try-squares, Rulers and other commonly used tools and materials used in carpentry shop by segregating as cutting tools, supporting tools, holding tools, measuring tools etc.

3.1.3 Specification of tools used in carpentry shop.

3.1.4 Different types of Timbers, their properties, uses & defects.

3.1.5 Seasoning of wood.

3.2. Practice

3.2.1 Practices for Basic Carpentry Work

3.2.2 Sawing practice using different types of saws

3.2.3 Assembling jack plane — Planning practice including sharpening of jack plane cutter

3.2.4 Chiselling practice using different types of chisels including sharpening of chisel

3.2.5 Making of different types of wooden pin and fixing methods.

Marking measuring and inspection of jobs.

3.3 Job Practice

Job 1 Marking, sawing, planning and chiselling and their practice

Job II Half Lap Joint (cross, L or T – any one)

Job III Mortise and Tenon joint (T-Joint)

Job IV Dove tail Joint (Lap or Bridle Joint)

3.4. Demonstration of job showing use of Rip Saw, Bow saw and Tenon saw, method of sharpening various saws.

4. PAINTING AND POLISHING SHOP

4.1. Introduction of paints, varnishes, Reason for surface preparation, Advantages of Painting, other method of surface coating ie. Electroplating etc.

4.2. Job Practice

Job 1: To prepare a wooden surface for painting apply primer on one side and to paint the same side. To prepare french polish for wooden surface and polish the other side.

Job II: To prepare metal surface for painting, apply primer and paint the same.

Job III: To prepare a metal surface for spray painting, first spray primer and paint the same by spray painting gun and compressor system.

The sequence of polishing will be as follows:

Abrasive cutting by leather wheel

Polishing with hard cotton wheel and with polishing material Buffing with cotton wheel or buff wheel.

MEANS OF ASSESSMENT

Workshop jobs

Report writing

presentation

Viva voce

RECOMMENDED BOOKS

Workshop Technology I,II,III, by SK Hajra, Choudhary and AK Choudhary; Media Promoters and Publishers Pvt. Ltd. Mumbai.

Workshop Technology Vol. I, II, III by Manchanda; India Publishing House, Jalandhar.

Workshop Training Manual Vol. I, II by S.S. Ubhi; Katson Publishers, Ludhiana. Manual on Workshop Practice by K Venkata Reddy; MacMillan India Ltd., New Delhi

Basic Workshop Practice Manual by T Jeyapoovan; Vikas Publishing House (P) Ltd., New Delhi

Workshop Technology by B.S. Raghuwanshi; Dhanpat Rai and Co., New Delhi Workshop Technology by HS Bawa; Tata McGraw Hill Publishers, New Delhi.

DCOMMCO108 COMMUNICATION SKILLS – I

LIST OF PRACTICALS

Note: Teaching Learning Process should be focused on the use of the language in writing reports and making presentations.

Topics such as Effective listening, effective note taking, group discussions and regular presentations by the students need to be taught in a project oriented manner where the learning happens as a byproduct.

Listening and Speaking Exercises

Self and peer introduction Newspaper reading

Just a minute session-Extempore Greeting and starting a conversation Leave taking

Thanking

Wishing well

Talking about likes and dislikes Group Discussion

Listening Exercises.

INSTRUCTIONAL STRATEGY

Student should be encouraged to participate in role play and other student centred activities in class room and actively participate in listening exercises

MEANS OF ASSESSMENT

Assignments and quiz/class tests, mid-semester and end-semester written tests Actual practical work, exercises and viva-voce

Presentation and viva-voce

DAPPLCO109 *Applied Physics-I LAB

LIST OF PRACTICALS (to perform minimum six experiments)

1 To find radius of wire and its volume and the maximum permissible error in these quantities by using both vernier calipers and screw gauge.

2 To find the value of acceleration due to gravity on the surface of earth by using a simple pendulum.

3 To determine the Radius of curvature of (i) convex mirror, (ii) concave mirror by spherometer

4 To verify parallelogram law of forces

5 To study conservation of energy of a ball or cylinder rolling down an inclined plane.

6 To find the Moment of Inertia of a flywheel about its axis of rotation

7 To determine the atmospheric pressure at a place using Fortin's Barometer 8 To determine the viscosity of glycerin by Stoke's method

9 To determine the coefficient of linear expansion of a metal rod

10 To determine force constant of spring using Hooks law

INSTRUCTIONAL STATREGY

Teacher may use various teaching aids like live models, charts, graphs and experimental kits etc. for imparting effective instructions in the subject. The teacher should explain about field applications before teaching the basics to develop proper understanding of the physical phenomenon. Use of demonstration and animations can make the subject interesting and may develop scientific temper in the students. Teacher must plan a tour of Science Park/planetarium available in nearby areas in order to enhance the interest in this course.

MEANS OF ASSEMENTS

Assignment & Quiz,

Mid-Term and End-Term written test, Model Making,

Actual Lab & Practical Work, VivaVoice

DAPPLCO110

***Applied Chemistry LAB**

LIST OF PRACTICALS

Estimation of total hardness of water using standard EDTA solution

Estimation of total alkalinity of given water sample by titrating it against standard sulfuric acid solution

Proximate analysis of solid fuel)

Estimation of temporary hardness of water sample by O' Hener's Method.

Determination of flash and fire point of given lubricating oil using Able's flash point apparatus

INSTRUCTIONAL STRATEGY

Teachers may take help of various models and charts while imparting instructions to make the concept clear. More emphasis should be laid on discussing and explaining practical applications of various chemical process and reactions. In addition, students should be encouraged or motivated to study those processes in more details, which may find practical application in their future professional career.

MEANS OF ASSEMENTS

Assignment & Quiz,
Mid-Term and End-Term written test, Model Making,
Actual Lab & Practical Work,
Viva Voice

DFUNDCO111 Fundamentals of Computer and Information Technology LAB

LIST OF PRACTICALS

1. Familiarization with Computer System and its peripheral devices
2. Familiarization with Operating System
3. Practice of internal and external commands of DOS
4. Working practice on windows operating system : creating file, folder. Copying, moving, deleting file, folder
5. Installing and uninstalling of new software using control panel.
6. Installation and uninstallation of new hardware drivers using control panel.
7. Disk defragmentation using system tool
8. Procedure of disk partition and its operation (Shrinking, Extending, Delete, Format).
9. Installation of Operating Systems
10. Changing resolution, colour, appearances, and screensaver option of the display
11. Changing System Date and Time.
12. User Account creation and its feature on Windows Operating System
13. Email Account creation, reading, writing and sending emails with attachments.
14. Internet browsing using browsers.
15. Using of Search Engine to get information from internet

INSTRUCTIONAL STRATEGY

Since this subject is practice oriented, the teacher should demonstrate the capabilities of computers to students while doing practical exercises. The students should be made familiar with computer parts, peripherals, connectors etc. and proficient in making use of operating system functionalities in addition to working on internet. The student should be made capable of working on computers independently

MEANS OF ASSESSMENT

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