2.1 ENGLISHANDCOMMUNICATIONSKILLS-II

L	P
3	2

RATIONALE

Communication skills play 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.

LEARNINGOUTCOMES

Afterundergoingthe subject,thestudentswillbe able to:

- Makeproperoralpresentations. ● Speak confidently.
- Debateproperly.
- Writeaccurateofficial/businessletters. ● Respondtotelephonecallseffectively. ● Overcome communication barriers.

DETAILEDCONTENTS

1. Functional Grammar and Vocabulary (12hrs)

Theory and Practical exercises on following:
Onewordsubstitution
FunctionalGrammarand Vocabulary
PrefixesandSuffixes
Punctuation
Narration
Idiomsand Phrases

2. Reading (9hrs)
Comprehension,Vocabularyenrichmentandgrammarexercisesbasedonthe following readings:

Section-I

- TheLastLeaf-O'HenrySparrows -
- K A Abbas
- ThePostmaster-RabindraNath Tagore

Section-II

- NightoftheScorpion- Nissim Ezekiel
- AlltheWorldisaStage-WilliamShakespeare ▪ Success –Emily Dickenson
- Daffodils–WilliamWordsworth

3. Writing (24hrs)

WritingResumeandCoverletter
Correspondence:Businessand Official
ReportWriting–Introductionandfeaturesofgoodreport.
Press Release
MemosandCirculars
Notices(lost,found,andauction)
AgendaandMinutes ofMeetings
Filling-updifferentformssuchasbankformandon-lineformfor placement etc.
PrecisWriting
Email writing

LIST OFPRACTICALS

1. Groupdiscussiononsomecurrenttopic ofinterest.
2. Smallspeechusingvoicemodulation.
3. Debate
4. Mannersand Etiquette
5. Powerpointpresentation
6. Telephonicconversation:Generaletiquetteformakingand receiving calls.
7. Mockinterviews

INSTRUCTIONALSTRATEGY

Open source software should be used to help the students in developing listening skills. Studentcentred activitiessuchas group discussions,roleplayshouldbe usedtoensure active participation of students in the classroom.

RECOMMENDEDBOOKS

1. Revathi, Srinivas, "Communicating Effectively in English, Book-I", Abhishek Publications, Chandigarh.
2. Mohan,Krishna&MeeraBanerji,"DevelopingCommunicationSkills(2nd Edition)", PublishedbyMacmillanPublishersIndia Ltd;New Delhi.
3. Eastwood, John, "Oxford Practice Grammar", Oxford University Press, London

4. Chadha, R. K., "Communication Techniques and Skills", Dhanpat Rai Publications,New Delhi.
5. Wren & Martin, "High School English Grammar and Composition", S. Chand & CompanyLtd., Delhi.
6. Kumar, Sanjay & Pushp Lata, "Communication Skills", Oxford University Press, New Delhi

WEBSITESFOR REFERENCE

1. http://www.mindtools.com/page8.html
2. http://www.letstalk.com.in
3. http://www.englishlearning.com
4. http://learnenglish.britishcouncil.org/en/

SUGGESTEDDISTRIBUTIONOFMARKS

TopicNo.	TimeAllotted (Hrs)	Marks Allotted (Outof50)
1	12	12
2	9	12
3	24	26
Total	**45**	**50**

APPLIEDMATHEMATICS–II

L	P
3	-

RATIONALE

Applied mathematics forms the backbone of engineering students. Basic elements of differential calculus, integral calculus and differential equations have been included inthis course. This will develop analytical abilities to apply in engineering field and will provide continuing educational base to the students.

LEARNINGOUTCOMES

Afterundergoingthe subject,studentswillbeable to:

- Applydifferentialcalculustosolvemax/minandrelatedratemeasure problems.
- Apply concepts of definite integrals to calculate the area of a curve boundedby axes.
- Evaluatecomplex integralsinasimplerwaybyapplyingdefinite integral.
- Solveengineeringproblemsbymakinguseof ordinarydifferential equations.

DETAILEDCONTENTS

1. DifferentialCalculus (18hrs)

Definitionoffunction;Introductiontolimitandcontinuity (definition only).

Standard differentiation of algebraic, trigonometric, inverse trigonometric functions, logarithmic function and exponential function.

Differentiation of sum, product and quotient of functions, Differentiationof function of a function, differentiation of implicit functions and parametric functions.

Logarithmic differentiation and successive differentiation (excluding nth order).

Applicationofdifferentialcalculusin:

(a) Rate Measures

(b) Maximaandminima(singlevariablefunctions)using second order derivative only

(c) Equation of tangent and normal to a curve (for explicit functions only)

2. IntegralCalculus (22hrs)

Indefinite integrals, Integration as inverse operation of differentiation with simple examples.

Standardintegralsand relatedsimpleproblems

Simpleintegrationbysubstitution,bypartsandbypartialfractions (for linear factors only)

Evaluationofdefiniteintegrals(simple problems)

Evaluationof $\int_0^{\pi/2} \text{Sin}^n x.dx$, $\int_0^{\pi/2} \text{Cos}^n x dx$, $\int_0^{\pi/2} \text{Sin}^m x \text{Cos}^n x dx$

usingformulaewithoutproof(mandnbeingpositive integers only).

Applications of integration for evaluation of area bounded by a curve and axes (Simple problems).

3. DifferentialEquations (5hrs)

Definition,order,degree ofordinarydifferentialequations.

Formation of differential equation (up to 2nd order). Solution of Differential equations with Variable separation and Linear Differential equations.

INSTRUCTIONALSTATREGY

Basic elements of Differential Calculus, Integral Calculus, and Differential Equations can be taught in the light of their applications in the field of engineering and technology.By laying more stress on applied part, teachers can also help in providing continuing education base to the students.

RECOMMENDEDBOOKS

1. Grewal,BS, "Elementary Engineering Mathematics", Khanna Publishers, New Delhi
2. EngineeringMathematicsbyVol.I& IIbyS Kohli,IPH, Jalandhar
3. Sabharwal,SS&Dr Sunita Jain, "Applied Mathematics, Vol. I & II", Eagle Parkashan,Jalandhar

4. EngineeringMathematics,VolI,II&IIIbyVSundarametal,Vikas PublishingHouse (P) Ltd., New Delhi

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

6. ,Pal SrimantaandSubodh C. Bhunia, "Engineering Mathematics", Oxford UniversityPress,New Delhi

SUGGESTEDDISTRIBUTIONOFMARKS

Topic	**TimeAllotted (Hrs)**	**Marks Allotted (Outof50)**
1	18	20
2	22	25
3	5	05
Total	**45**	**50**

APPLIEDPHYSICS–II

L	P
2	2

RATIONALE

Applied physics includes the study of a large number of diverse topics related to things that go in the world around us. It aims to give an understanding of this world both by observation and prediction of the way in which objects behave. Concrete use of physical principles and analysis in various fields of engineering and technology

LEARNINGOUTCOMES

Afterundergoingthissubject,thestudentwillbe ableto;

- Applytheconceptofwavemotion
- Illustrate laws of reflection and refraction of light.
- Comprehendthephenomenonrelatedtoelectrostatics
- Comprehendthetermsandlawsrelatedtoelectricityandmagnetism.
- Make use of laser for engineering applications.

DETAILEDCONTENTS

1. Wavemotion and its Applications (6hrs)

Wave motion, transverse and longitudinal wave motion with examples, sound and light waves, relationship among wave velocity, frequency and wave length and its application

Free,forcedand resonantvibrationswithexamples

Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound, methods to control reverberation time and their applications

Ultrasonics–Introductionandapplications.

2. Optics (6hrs)

Lawsofreflectionandrefraction,refractiveindex,lensformulaforthin lenses, power of lens, magnification

Total internal reflection and its applications, Critical angle and conditions for total internal reflection

Simpleandcompoundmicroscope,astronomicaltelescopeinnormal adjustment, magnifying power (Only formula).

3. Electrostatics (6hrs)

Coulombslaw, unitofcharge,

Electric field, Electric lines of force and their properties, Electric flux, Electric potential and potential difference

Capacitor and itsworkingprinciple, Capacitanceandits units.Capacitance of parallel plate capacitor (No derivation), Series and parallel combination of capacitors (numericals)

Dielectricanditseffectoncapacitance,dielectricbreakdown

4. ElectricityandMagnetism (9hrs)

ElectricCurrentanditsUnit,Directandalternatingcurrent,

Resistance and its Units, Specific Resistance, Conductance, Specific Conductance, Series and Parallel combination of Resistances. Factors affecting Resistance, Superconductivity (concept only)

Ohm's law and its verification

Kirchhoff's laws, Wheatstone bridge principle

Heatingeffectofcurrent,Electricpower,Electricenergyanditsunits (related numerical problems)

Introductiontomagnetism,Typesofmagneticmaterials.Dia,paraand ferromagnetic materials with their properties,

Magneticfieldanditsunits,magneticlinesofforce,magneticfluxand their units

Concept of electromagnetic induction, Faraday's Laws and Lenz's law, Galvanometeranditsuse.

5. Modern Physics (3hrs)

Lasers: its characteristics, spontaneous and stimulated emission,population inversion;Principle, construction and working of Ruby laser, engineering applications of lasers.

LISTOFPRACTICALS(Toperformminimum8experiments)

1. Tofind thetimeperiodofasimplependulum
2. Todetermineandverifythetime period ofcantilever
3. Toverifylaws ofreflectionfromaplanemirror.
4. Tofindthefocallengthofconvexlensbyparallaxmethod.
5. Todeterminethemagnifyingpower ofanastronomicaltelescope
6. To verify ohm's laws by drawing a graphbetween voltageandcurrent.
7. Toverifylawsofresistancesinseriesandparallelcombination.
8. Tofindresistanceof galvanometerbyhalf deflectionmethod
9. Tomeasureverylowresistanceand veryhigh resistances usingSlideWirebridge
10. UseofCROin plottingAC andDC waveforms.
11. Tofindwavelengthofthelaserbeam.

INSTRUCTIONALSTATREGY

Teacher may use various instructional media like models, charts and graphs while imparting instructions.The field application should be made clear before teaching the basics to develop proper understanding of the physical phenomenon**.**Use of demonstration can make the subject interesting and develop scientific temper in the students.

RECOMMENDEDBOOKS

1. TextBookofPhysics(Part-I,Part-II);N.C.E.R.T., Delhi
2. ConceptsinPhysicsbyHCVerma,Vol.I&II,BhartiBhawan Ltd.New Delhi
3. PracticalPhysicsbyC. L.Arora,SChandPublications
4. EngineeringPhysicsbyPV Naik,PearsonEducationPvt.Ltd,New Delhi

SUGGESTEDDISTRIBUTIONOF MARKS

Topic	TimeAllotted(hrs)	Marks Allotted (Outof50)
1	06	10
2	06	10
3	06	10
4	09	15
5	03	05
Total	**30**	**50**

APPLIEDCHEMISTRY

L	P
3	2

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 diplomaholders to develop scientific temper and appreciate importance of chemistry. Hence the subject of Applied Chemistry.

LEARNINGOUTCOMES

Afterundergoingthissubject,thestudentwillbe ableto:

- •Interpretbothqualitativeandquantitativeaspectsofsimplechemicalsubstances. •
  Substantiate the laws and principles on which structure of atom is established.
- •Understandtypesofbondsinchemicalsubstanceandtheirinfluenceonthe properties of chemical substances.
- •Prepare solution of required concentrations.
- •Understand qualitatively and quantitatively pH and buffer solutions.
- •Significance of pH and buffer solutions and their industrial applications (in the process such as electrolysis, electrochemical machining of materials etc).
- •Explain cause and factors adversely affecting natural water quality and remedial measures available for water purification to achieve water quality standardsrequired for domestic, agricultural and industrial applications.
- •Appreciate and practice the water conservation techniques.
- •Identify and classify the substance based on the electric behavior.
- •Realize the laws/principles efficiently used in development of electrochemical cells towards the greener energy.
- •Identifymostefficientfuelfortheengineandengineeringapplications. •
  Understand the elementary idea of polymers and plastics
- •Distinguish different type of plastics and their applications.

DETAILEDCONTENTS

1. BasicConceptof Chemistry (2hrs)
   Symbols of elements and valency, writing of chemical formulae of simple compounds.
   Calculationofmolecularmassesof$CaCO_3$,NaCl,$CuSO_4$,NaOH,$Ca(OH)_2$, H_2SO_4, $C_2H_2O_4$. (Atomic mass of elements should be provided)

2. AtomicStructureandChemical Bonding (8hrs)

Bohr's model of atom (qualitative treatment only).

Atomicnumber,atomic massnumberisotopesand isobars.

Definition of orbit and orbitals, shapes of s and p orbitals only, quantumnumbers 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).

Chemicalbondingandcauseofbondingandtypesofchemicalbonding;

Ionicbond(example NaCl) and Covalent bond (sigma (σ) and pi (π) bonds)withexamples ofH_2,O_2,N_2andCH_4Metallicbonding.

3. Solutions (05hrs)

Definitionofsolution,solute andsolventwithexamples

Methods to express the concentration of solution- molarity (*M*) and molality (m), mass percentage, volume percentage and mole fraction and related simple numericals.

Arrheniusconcept of acidsandbases.pH ofsolution,simple numericalson pH and industrial applications of pH.

Definition of buffer solution and types of buffer solutions with examples and industrial applications of buffers solutions.

4. Water (10hrs)

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 numericals.

Disadvantages caused by the use of hard water in domestic industry andboiler feed water.

Removalofhardness-PermutitprocessandIon-exchangeprocess.

Drinkingwater andcharacteristicsofdrinkingwater.

NaturalwatersterilizationbychlorineandUVradiationandreverse osmosis (elementary idea).

5. ElectroChemistry (6hrs)

Electronicconceptofoxidation,reductionandredox reactions

Definitionofterms:electrolytes,non-electrolytes withsuitableexamples

Faradayslawsofelectrolysisandsimplenumerical problems.

IndustrialApplicationofElectrolysis–Electroplating.

Application of redox reactions in electrochemical cells (qualitative idea only excluding reactions) - commercial dry cell (Primary) and elementary idea of secondary cell (Only lead storage battery)

6. Chemistryof FuelsandLubricants (12hrs)

6.1. Definitionoffuel,classificationoffuels(primaryandsecondary),characteristics of good fuel.

Calorific value-higher calorific value, lower calorific value, determination of calorific value of solid or liquid fuel using Bomb calorimeter and numerical examples.

Coal-proximateanalysisofcoal

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. (preparation/manufacture excluded)

DefinitionofLubricantandcharacteristicsofgood lubricant

Classification of lubricants –liquid lubricants, solid lubricants, semi-solid lubricants with examples

Properties of lubricant: Physical properties –viscosity and viscosity index, cloud point and pour point, flash point and fire point, oiliness.Chemical properties- Total Acid Value or Number (TAV or TAN), carbon residue, saponification value.

7. PolymersandPlastics (02hrs)

Definitionofpolymer, monomeranddegreeof polymerization

Brief introduction of plastics - thermo plastics and thermo setting plastics with suitable examples (PVC, PS, PTFE, Nylon 6, Nylon 66, bakelite) distinction between thermo and thermo setting plastics

Applicationsofpolymersinindustryanddailylife

Introductiontonanomaterialsandnanotechnology

LIST OFPRACTICALS

1. Preparationofstandardsolutionof oxalic acid.
2. Todeterminestrengthofgivensodiumhydroxidesolutionbytitratingagainst standard oxalic acid solution using phenolphthalein indicator.
3. TodetermineTDSingivensampleofwater. 4.
5. Determination of pH of given solution using pH meter.
6. Estimationoftotalalkalinityofgivenwatersamplebytitratingitagainststandard sulfuric acid solution.
7. Gravimetricestimationof moistureinthegivencoalsample(proximate analysis).
8. Gravimetricestimationofashcontentinthegivencoalsample(proximate analysis).
9. Determinationofviscosityof givenliquidusingRedwoodviscometers
10. ToconstructsimpleDanielcellandmeasureitse.m.f.usingvoltmeter.
11. Toestimatehardnessof waterusingEDTAmethod.

INSTRUCTIONALSTRATEGY

Teachers may take help of various models and charts while imparting instructions tomake the concept clear.More emphasis should be laid on discussing and explaining practicalapplicationsofvariouschemicalprocessandreactions.Inaddition,students

should be encouraged or motivated to study those processes in more details, which mayfind practical application in their future professional career.

RECOMMENDEDBOOKS

1. Kuricose,J.C. and J. Rajaram, "Chemistry in Engineering", Tata McGraw Hill, PublishingCompanyLimited,New Delhi.
2. Jain,P.C.&MonikaJain,"Engineering Chemistry", Dhanapat Rai Publishing Company, New Delhi.
3. Ahuja,S.C.andG.H.Hugar, "Eagle's Applied Chemistry (I and II)", Eagle Prakashan,Jalandhar.
4. Rao, C N R, "Understanding Chemistry", Universities Press (India) Pvt Ltd., 2011
5. Chopra,H.K.& A. Parmar, "Engineering Chemistry – A Text Book", Narosa PublishingHouse,New Delhi.
6. Pandey,Dr. Himanshu, "Engineering Chemistry", Goel Publishing House, Meerut,India.

SUGGESTEDDISTRIBUTIONOFMARKS

Topics	TimeAllotted (hrs)	Marks Allotted (Outof50)
1.	02	03
2.	08	08
3.	05	06
4.	10	12
5.	06	06
6.	12	12
7.	02	03
Total	**45**	**50**

BASICSOFELECTRICALANDELECTRONICS ENGINEERING

L	P
3	2

RATIONALE

This subject gives the knowledge of fundamental concepts and principles of basic electrical and electronics engineeringand aims atprovidingthe students tounderstand the basic concepts and principles of DC and AC Circuits, electromagnetic induction and with basic understanding of various types of materials such as conductors, semiconductors and insulators, p-n junction, need of rectifiers, concept of transistor, working of transistors in various configurations and their applications. The teacher should give emphasis on understanding of concepts by explaining the various terms used in the subject. Practical exercises have been included in order to reinforce various concepts. Industrial/field exposure must be given by organizing industrial visit.

LEARNINGOUTCOMES

After goingthroughthe subject,thestudentswillbeableto:

- Explain the concept of DC circuits and various laws such as Ohm's Law, Kirchhoff's Laws.
- Demonstratetheconceptofelectro-magneticinduction,self-inductance,mutual inductance and terminologies related to EMI.
- Demonstratethetypes of cell and batteries, its construction, applications and steps to maintain the battery.
- DescribetheconceptofACquantityandACcircuitscontainingresistance, inductance and capacitor.
- PlottheVIcharacteristicsofPNjunctiondiodeandZenerdiode.
- ExplaintheconceptofHalfwave,FullwaveandBridgerectifierandobserve waveforms of each.
- Plotinputandoutput characteristicsoftransistorinCBandCE mode.
- ExplaintheconceptofFETandMOSFETandplottheinput,output characteristics

DETAILEDCONTENTS

1. **DCCircuits** (05hrs)

1.1 Definition of voltage, current, power and energy with their units, Ohm's Law, Difference betweenac anddc.Simpleproblems onseries andparallel combinationof resistors with their wattage consideration.

Application of Kirchhoff's current law and Kirchhoff's voltage law to simple circuits.Star –Deltaconnections andtheirconversion.ConceptofVoltage source and current source.

Conceptofnodalanalysis,Meshandloopanalysis, 1.4

TheoremsSuperposition theorem, Thevenin's theorem, Norton's theorem, MaximumPowertransfer theorem.

2. ElectroMagneticInduction (05hrs)

Concept of electro-magnetic field produced by flow of electric current, magneticcircuit,conceptofmagneto-motiveforce(MMF),flux,reluctance, permeability, analogy between electric and magnetic circuit.

Faraday's laws of electro-magneticinduction,principlesofselfandmutual induction, self and mutually induced e.m.f.

3. Batteries (06hrs)

Basicideaofprimaryand secondarycells

Construction, working principle and applications of Lead-Acid, Lithium-ion, Nickel-Cadmium batteries, Charging methods used for lead-acid battery, Care and maintenance of lead-acid battery, Series and parallel connections of batteries

Generalideaofsolarcells,solar panels andtheir applications

4. AC Fundamentals (06hrs)

Concept of alternating quantities, Concepts of: cycle, frequency, time period, amplitude, instantaneous value, average value, r.m.s. value, maximum value, form factor and peak factor, Representation of sinusoidal quantities by phasor diagrams.

Equationofsinusoidalwaveformforanalternatingquantityandits derivation

Effectofalternatingvoltageappliedtoapureresistance,pureinductanceand purecapacitance.

5. SemiconductorPhysics (06hrs)

Basic atomic structure, Concept of insulators, conductors and semiconductors, atomic structure of Germanium (Ge) and Silicon (Si).

Conceptofintrinsicandextrinsicsemiconductor andtypes,processof doping.

Energy level diagram of conductors, insulators and semiconductors; minority and majority charge carriers.

Formation of P and N type semiconductors and their conductivity, effect of temperature on conductivity of intrinsic semiconductors.

6. SemiconductorDiode: (06hrs)

PN junction diode, forward and reverse biased PN junction, potential barrier, drift and diffusion currents, depletion layer,V-I characteristics,

Zenerdiode andtheir applications.

Application of diode as half-wave, full wave and bridge rectifiers.(without derivation).

Voltageregulatorsandtheir types.
Clipper& clampers

7. Bipolar-Transistors (06hrs)

Concept of a bipolar transistor, its structure, PNP and NPN transistors, their symbolsandmechanismofcurrentflow;Currentrelationsinatransistor;conceptof leakage current;

CB,CE,CCconfigurationsofatransistor and theircomparison.

8. FieldEffect Transistors (05hrs)

Construction,operationandcharacteristicsofFETsandtheirapplications.

Construction, operation and characteristics of a MOSFET in depletion and enhancement modes and its applications.

CMOS-advantages andapplications

LIST OFPRACTICALS

1. Operation and use of the following instruments: voltmeter, ammeter ,Wattmeter, Multi-meter,CRO,Signalgenerator,LCRmeter,RegulatedPowerSupplybywayof taking readings of relevant quantities with their help.

2. Toverifyfollowingnetworktheoremsapplicable toD.C.circuit.i) Superposition Theorem, ii) Thevenin's Theorem

3. Determinationofvoltage-currentrelationshipinadccircuitunderspecificphysical conditions and to draw conclusions.

4. VerificationofKirchhoff'sCurrentandVoltageLawsinadc circuit

5. Observationofchangeinresistanceofabulbinhotandcoldconditions,using voltmeter and ammeter.

6. Tofindtheratioofinductanceofacoilhavingair-coreandiron-corerespectivelyand to observe the effect of introduction of a magnetic core on coil inductance

7. Identificationandconnectionofbatteriesinanelectronic circuit.

8. PlottingofV-Icharacteristicsof aPN junctiondiode

9. PlottingofV-Icharacteristicsof aZenerdiode.

10. Toobserve and plottheoutputwaveshapeof:

   a. Half-waverectifiercircuitusingone diode

   b. Full-waverectifiercircuitusingtwodiodes

   c. Bridge-rectifiercircuitusingfourdiodes

11. PlottingofinputandoutputcharacteristicsoftransistorsinCE&CBconfiguration.

RECOMMENDEDBOOKS

1. BasicsofElectricalEngineeringbyG.L.Marwaha,EagleParkashan,Jalandhar.
2. Basic Electrical and Electronics Engineering by SK Sahdev; Dhanpat Rai and Co, New Delhi.
3. A Textbook of Basic Electrical and Electronics Engineeringby J.B Gupta , S.K. Kataria & Sons, New Delhi
4. BasicElectronicsbyHarishC.Saini,Eagle Parkashan,Jalandhar
5. BasicElectronics and LinearCircuit byNN Bhargava, Kulshreshta and SC Gupta, Tata McGraw Hill Education Pvt Ltd., New Delhi.

SUGGESTEDDISTRIBUTIONOFMARKS

TopicNo.	TimeAllotted(Hrs)	MarksAllotted(Outof 50)
1	05	06
2	05	06
3	06	06
4	06	07
5	06	07
6	06	07
7	06	06
8	05	05
Total	**45**	**50**

DESKTOPPUBLISHING(DTP) FUNDAMENTALS

L	P
-	4

RATIONALE

This course will enable the students to familiarize with the features and use of application packagessuchasAdobePhotoshop,CorelDraworanyotherequivalentlatestpackage(s). Theywill develop skills in handling the software. AdobePhotoshop will help the students in understanding technical aspects of multimedia content creation, the processes and tools used for designing multimedia systems. This will make the students proficient in designing and developing a multimedia application.

Note: Since this is a practical oriented subject, there will be no theory paper. It is suggested that the teacher should explain the following topics during the practical classes itself.

LEARNINGOUTCOMES

Afterundergoingthe subject,thestudentswillbe able to:

- Operateanddesigningraphics.
- Usephoto-shopsoftwarefordrawingandeditingphotos. ●
  Identify the tools to create animations
- Reduce the size of various file formats i.e. audio, video and text.
- Demonstratetheconceptsrelatedtodesktoppublishingsoftware. ●
  Design visiting cards and advertisement pamphlets.
- Designweddingcards,flex andprinted designerboxes.
- Designmulti-pagedocumentanddrawingpicturesforthebooks. ●
  Add special effects in drawing.
- Generatespecialeffectstovarioustypesoftextinvariousdocuments. ●
  Add various symbols to a design and creating different patterns.

TOPICSTOBEEXPLAINEDTHROUGHDEMONSTRATION

1. Introduction

   OverviewofDesktop Publishing (DTP)

2. PhotoshopandAnimationTechnology

   Photo-shop workshop, image editing tools, specifying and adjusting colours, using gradient tools, selection and move tools, transforming path drawing and editing tools, using channels, layers, filters and actions

AnimationTechnology

Definition,HistoryofAnimation,Typesofanimation-2Dand3D,Basicprinciplesof animation, Various Terms-Animation Drawings/Cels, Rough Drawings, Clean ups, Colour reference drawings, Layout, Model Sheet, Key Drawings and in Between, Master Background, Concept Piece, Character drawing, Story Board.

2. Corel Draw/Inkscape

Introduction, exploring Corel Draw screen, using dialog boxes, using roll ups,create/open file, save file, import/export files, print file

- Use of ribbon bar, use of tool box, select object, shaping objects using zoom tool, filling objects, outline objects, use of line tool
- Setting up new drawing, setting multi-page document, undo/redo mistakes, repeat, cut, copy, paste, delete, duplicate, clone
- Insertobject,pastespecial,copyattributesfromselectall,drawingobjects, selecting objects
- Pagesetup,insert/deletepage,useoflayers,rollup,gridandscalesetup, guideline set up

Formattingobjects

- Arrangingobjects:align,order,group,ungroup
- Arrangingobjects:combine,breakapart,weld,intersection,trim,separate •

Mode edit: to line, to curve, stretch, rotate, align, convert to curves

- Creating special effects: Transform roll up, clear transformation, add perspective, envelope roll up
- Creating special effects: blend roll-up, extrude roll up, counter roll up, power line, power-clip clear effects
- Workingwithtext:Character,paragraphtext,frame,settingoftabs,indents,bullets, spacing in paragraph text

LISTOFPRACTICALS

1. Usingvariousfeaturesof Photo-shop/GIMP
2. Making multimedia presentations combining, Flash, Photo-shop, such as department profile, lesson presentation, games and project presentation
3. Flip Books: Capture a series of images using your camera's continuous mode. Design yourFlipbook,Printingtheflipbook,LayouttheFlipbookpages,Arrangethepictures, Holding the end of the stack.
4. StopMotionAnimation:usingcharactersin stopmotion animation.

5. Insertingobjects in the drawing, aligning, ordering, grouping and ungroupingof those objects
6. Useofcombine,breakapart,weld,intersection,trimandseparatetoolsinagiven drawing
7. Useofmodeedittools i.e.to line,to curve,to stretch,and rotate
8. Creatingspecialeffectsi.e.transformroll-up,enveloprollup,addperspective, extrude roll up, contour roll up, power line, power clip, clear effects.
9. To insert character and paragraph text in a drawing and frame, setting of tabs, indents, bullets and spacing in paragraph text.
10. Fillingoftexttoagivenpath, aligningitto baseline, straightentext andedit text
11. Usingtoolssuchasspellchecker,andthesaurus.
12. Usingfind andreplacetextutilityand typeassist.
13. Addingvarioussymbols toadrawingand creatingdifferentpatterns.
14. Todrawvariouslogoswiththehelpof tracingmethods.

INSTRUCTIONALSTRATEGY

This subject is completely practical oriented. Stress is to be given to impart hands on experience to the students. With this subject, the students will be able to create, edit, format and print a document with the help of corel-draw,Adobe Photoshop etc.

RECOMMENDEDBOOKS

1. Learning Desktop Publishing by Ramesh Bangia; Khanna Book Publishing Co. Pvt. Ltd., New Delhi
2. DesktopPublishingfrom AtoZbyBillGroutandOsborne;McGrawHill
3. DTP (Desktop Publishing) for PC user byHoughton; Galgotia Publishing House Pvt. Ltd., Daryaganj, New Delhi.

COMPUTERWORKSHOP

L	P
-	4

RATIONALE

The course aims at making the students familiar with various parts of computers and how to assemble them, and different types of peripherals desired. In addition, the course will provide the students with necessary knowledge and skills in computer softwareinstallation and maintenance to make him diagnose software faults.

LEARNINGOUTCOMES

Afterundergoingthe subject,thestudentwillbe ableto:

- Identifyvariouscomputercomponents. ● Writethespecifications ofacomputer.
- DescribeanddifferentiatevarioustypesofMotherboard,Processors,RAM, Secondary storage devices.
- Installvariouscomponentsof computer.
- Assembleandde-assemblecomputer system.
- Installoperatingsystemi.e.MS-WindowandLinux.
- Diagnosethevariousfaultsincomputersystemi.e.SMPS,HDD,RAM. ● Identify various cables used for connection.
- Outlinethedimensions(spacerequirements)forsettingacomputercentre. ● Install and configure various application software.
- Identifyvarioustypesofvirusandcleanthesystemusingvariousantivirus software.

DETAILEDCONTENTS

Part-A(Hardware)

Familiarization and specifications with various components and parts of personal computer: Motherboarddetails, harddisk drive, floppydisk drive. CDROMdrive, DVD, Blu-ray keyboard, display devices, various chips (memory chips and CPU); serial and parallel ports, inkjet, USB Ports, SATA Fire wire, Bluetooth, Dot matrix and Laser printers.

Introductionandworkingprincipleof UPS

Assembling and disassembling of PCs, power supply, linear power supplyand switch modepower supply, trouble shooting of SMPS.

Setting up of basic infrastructure for computers (including power layout, air conditioning, earthing etc.

Demonstrate various types of cables like twisted pair cable, co axial cable, fiber optics cable, general purpose cables

Introductiontovariousnetworkingdeviceslikenetworkinterface card,hubs,router, switch, connectors, and modem.

Introductiontosinglephaseandthreephasesupplyandwiringsystem.Importance of three phase supply and wiring system.

Useofmultimetertotestcomponentsandmeasurementof circuitvoltage,resistance.

Part-B(Software)

Introduction to FOSS, installation of various operating systems, LINUX/MS windows latest versions.Setting up multiboot system/dual boot system. Familiarization of their features with practical demonstrations. Create window system image. Installation and configuration of device drivers. Disk management

Installation of latest version of application software proprietary/free softwarelike MS-Office/open office, Adobe Photoshop, Corel Draw, Macromedia Flash etc.

Installation and configuration of latest version of database software like Oracle/ MySQL/ SQL Server etc.

IntroductiontoVirus/Spyware/Worm/TrojanHorse,theirdetection,prevention and cure.

Installation,uninstallationanduseofAntivirussoftware.

INSTRUCTIONALSTRATEGY

As the subject is practice oriented, sufficient exercises on assembling and dissembling of computer system shouldbe given..Field visits tothe places where assemblyof computers istakingplacewillbehelpfultothestudents.VisitstothemanufacturingunitsofCVTor UPS will also be helpful to the students.

RECOMMENDEDBOOKS

1) PCUpgradeand MaintenanceGuidebyMarkMinasi,BPB Publication
2) HardwareBiblebyWinnRosch,Techmedia Publications
3) IBMPCand Clones byB GovindaRajalu.TataMcGrawHillEducationPvtLtd, New Delhi

4) Common Computer Circuits and Faults Vol. 1 by M. Lotia, BPB Publications, New Delhi
5) MonitorandFaultDiagnosisVol.1andII.M. Lotia,BPBPublications,New Delhi
6) CompleteGuidetoWindowandWorkstationbyPeterNorton.TechMedia Publications, New Delhi

GENERALWORKSHOP-II
(ForComputerScienceandEngineering,InformationTechnology, Electronics and Communication Engineering)

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RATIONALE

Psychomotor skills are mastered through practice, an opportunity therefore, has been extendedtostudentsthroughthiscoursetorefinetheirskillsindifferenttrades.Thebasic skills developed during first semester will be refined during this course by doing higher order skills jobs including machining. In addition to developing general manual and machining skills in the students, the objective of development of sense of dignity of labour, precision, safety at work places, team working and right attitude among the students will also be met.

LEARNINGOUTCOMES

Aftercompletingthecourse,the studentswillbeableto:

- Select materials, sequenceof operations, select tools to make a given job based on interpretation of drawing as per given specification with close tolerances using at least the resources of three shops.
- Prepareajobaspergivenspecificationsfora givenshop.
- Specify and read/understand specifications of different types of tools, equipment and machines used in various shops.
- Inspectvisuallytoidentifyvarioustypesofdefectsindifferenttypeofmaterials. ● Analyze a given job and identify various operations required to make it.
- Followsafetyproceduresandmeasures. ● Maintain good housekeeping practices.

DETAILEDCONTENTS(PRACTICAL)

Note: The studentsare supposedtocome inproperworkshopuniformprescribedby the institute. Wearing shoes in the workshop(s) is compulsory. Importance of safety and cleanliness, safety measures and upkeep of tools, equipment and environment in each of the following workshops will be explained for conductof practical. The students should prepare sketches of various tools/jobs sequence of operations etc. in their practical notebook.

Thefollowingshopsareincludedinthesyllabus.

1 WeldingShop–II
2 FittingShop–II
3 SheetMetalShop–II
4 ElectricShop-II
5 CarpentryShop–II
6 ElectronicShop–II

1. WELDINGSHOP–II

Safety precautions of concerned shop and use of Personal Protective Equipment (PPE). Introduction to gas welding (Oxy-acetylene welding,Air acetylene welding, Oxy-hydrogen welding). Introduction to gas welding equipment: - Gas welding torch, cylinders, Blow pipe andPressure regulators etc. Types of gas welding flames. Functions of filler materials and fluxes. Introduction to soldering and brazing. Difference between welding, soldering and brazing. Introduction to resistancewelding.

Demonstration of Gas welding equipment, TIG, MIG and Spot welding machines. Demonstration of brazing and soldering

Jobs tobe prepared:

JobIMaking a lap joint on 75 mm × 35 mm × 3mm M.S. plate using gas welding (Oxy-acetylene).

JobII Makingasimplejob onspot weldingmachine.

2. FITTINGSHOP-II

Safety precautions of concerned shop and use of Personal Protective Equipment (PPE). Introduction, function and specification of different types of cutting tools (chisels and scrapers etc.), tightening tools (pliers, screw driver, wrenches etc.) types of drill and drilling machines used in fitting shop. Classification of files: according to cut, grade, and shape. Measuring devices (Fillet/radius gauge, screw pitch gauge, wire gauge, telescopic gauge), Vernier height gauge. Surface gauge and universal surface gauge. Description of drill, reamer, tap and die set. Selection of dies for threading, selection of drill size for taping.

Demonstrationon use of various measuring tools (Vernier caliper, Vernier height gauge and outside and inside micrometers etc.), finding least count and checking of zero error. Demonstration of various types of drills, taps and dies.

Jobs tobe prepared:

Job ITo make a job by drilling and tapping (manually) process on soft metals- Aluminum or Copper or Bronze.

Job IITo Make'U'typecut-out profile from a square piece of MS flat using hand hacksaw, filing, marking, drilling and measuring operations up to an accuracy of±0.1 mm.

3. SHEETMETALSHOP -II

Safety precautions of concerned shop and use of Personal Protective Equipment (PPE). Introduction and functions of various machines and equipment used in sheet metal shop e.g. Shearing Machine, Bar Folder, Burring Machine, Wood Turning Machine, Wiring Machine, Setting Down Machine, Forming Machine, Fly press etc.Introduction to various metal forming processes e.g. Spinning, Punching, Blanking, cup drawing, Introduction to metal spinning process. Introduction of various types of nuts, bolts, screws etc.

Demonstrationof variousmachinesand typesofnuts,bolts,screwsetc.

Jobs tobe prepared:

Job I Toprepareajobinvolvingsolderingorbrazingprocess. Job II To fabricate a funnel/conduit pipe from GI sheet.

4. ELECTRICSHOP-II

Safety precautions of concerned shop and use of Personal Protective Equipment (PPE), Introduction and use of single phase and three phase supply, its wiring system and importance. Introduction and function of an electric motor for anythree-phase electric machine. Estimating and costing of power consumption. Identification and familiarization with thefollowing tools: Tweezers, Screw Drivers (Different sizes), Insulatedpliers, Cutters, Sniper, Philips Screw driver (star screw driver), L-Keys.

Demonstration of dismantling, servicing and reassembling of table/ceiling fan, air-cooler, auto electric iron, heater etc. Testing and reversingdirection of rotation of single phase and three phase motors and their wiring methods.

JobPractice:

JobIConnection of single-phase energy meter with supply and load including reading and working out power consumption and cost of energy.

JobIIFinding faults in electric circuits, machines, with series testing lamp and multimeter.

JobIIIConnection and wiringpractice for reversing direction of rotation of single phase and three phase motors

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5. CARPENTRYSHOP–II

Safety precautions of concerned shop and use of Personal Protective Equipment (PPE). Introduction, parts and functions of Jig saw and radial saw wood working machine, Band saw, Circular saw and Electric Planer. Introduction and basic functions of Wood working lathe and its tools. Saw re-sharpening machine, wood working lathe, Saw Brazing unit.

Demonstration of Rip Saw, dovetail saw and Tenon saw. Method of sharpening various saws. Demonstration on Band Saw and Circular Saw, Chain and Chisel, Universal wood working machine, Saw re-sharpening machine, Saw Brazing unit.

Jobs tobe prepared:

JobI Preparationofmitre joint.
JobII Preparationofalengtheningjoint

6. ELECTRONICSHOP–II

Identificationandfamiliarizationwithtoolsusedinlayingofnetworking, monitoring systems.

Identificationandfamiliarizationwithdifferenttypesof Routers,Modems, Switches, Smart hubs etc.

Job Practice

JobI CreationofLAN. connectingatleast4 systems.

Job II Useofvarioustypesofswitchesandprotectivedevicesin electronic circuits

JobIII Tomakeregulated powersupplyon generalpurposePCB.

Note:-

1. Workshopinstructorswillguideandhelpthestudentsthroughoutthepracticalclassin order to explain and complete the job according to syllabus and for providing necessary facilities to the students during performance of practical by observing the safety precautions
2. The Workshop Superintendent or Foreman Instructor or Instructor will demonstrate and deliver the theoretical instructions with regard to introduction, functions, classification and specification of tools, instruments, equipment, apparatus etc. of all the topics covered in the syllabus of workshops.
3. The Workshop Superintendent or Foreman Instructor will also conduct the mid-term test and final practical exam of this subject.

RECOMMENDEDBOOKS

1. WorkshopPracticeBySwaranSingh,S.K.Kataria&SonsPublisherof Engineering Books New Delhi.
2. WorkshopPracticebyHSBawa;Tata McGrawHillPublishers,NewDelhi.
3. WorkshopTechnologyI,II,III,bySKHajra,ChoudharyandAKChoudhary; Media Promoters and Publish ers Pvt. Ltd. Mumbai
4. WorkshopTechnologyVol.I,II,IIIbyManchanda;IndiaPublishingHouse,Jalandhar
5. WorkshopTechnologybyB.S.Raghuwanshi;DhanpatRaiandCo.,New Delhi

TRAFFICAWARENESS&ROADSAFETYCAMP(II)

A diploma holder must have knowledge of various types of traffic rules and regulations. Road safety education is vital for people of all ages. As a responsible citizen, you should be aware of each and every road safety rules. Observation is the key skill you need in ensuring road safety By obeying safety rules and regulations, you can save yourself and others on the road. This camp covers the basic concepts of traffic rules and safety. Lectures will be delivered on following broad topics with the coordination of Distt.Traffic police. There will be no exam for this camp.

1. Time management
2. Trafficlightsignals
3. Speedlimitsofvehicles
4. Scheduleof offences
5. Dividinglines
6. ProperroadMaintenanceandWarnings
7. Test yourself