

2.1. ENGLISH LANGUAGE – II

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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:

- Frame correct sentences with illustrations
- Modify the language correctly
- Comprehend the language correctly
- Interpret the language correctly
- Use given material in new situations.
- Correspond effectively using various types of writings like letters, memos etc.
- Communicate effectively in English with appropriate body language making use of correct and appropriate vocabulary and grammar in an organised set up and social context.

DETAILED CONTENTS

1. Functional Grammar (15 periods)
 - 1.1 Prepositions
 - 1.2 Framing Questions
 - 1.3 Conjunctions
 - 1.4 Tenses
- 2 Reading (15 periods)
 - 2.1 Unseen Passage for Comprehension (Vocabulary enhancement - Prefixes, Suffixes, one word substitution, Synonym and Antonym) based upon the passage should be covered under this topic.
- 3 Writing Skill (18 periods)
 - 3.1 Correspondence
 - a) Business Letters- Floating Quotations, Placing Orders, Complaint Letters.
 - b) Official Letters- Letters to Government and other Offices
 - 3.2 Memos, Circular, Office Orders
 - 3.3 Agenda & Minutes of Meeting

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.

Speaking and Listening Skills

1. Debate
2. Telephonic Conversation: general etiquette for making and receiving calls
3. Offering- Responding to offers.
4. Requesting – Responding to requests
5. Congratulating
6. Exploring sympathy and condolences
7. Asking Questions- Polite Responses
8. Apologizing, forgiving
9. Complaining
10. Warning
11. Asking and giving information
12. Getting and giving permission
13. Asking for and giving opinions

INSTRUCTIONAL STRATEGY

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

MEANS OF ASSESSMENT

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

RECOMMENDED BOOKS

1. Communicating Effectively in English, Book-I by RevathiSrinivas; Abhishek Publications, Chandigarh.
2. Communication Techniques and Skills by R. K. Chadha; DhanpatRai Publications, New Delhi.
3. High School English Grammar and Composition by Wren & Martin; S. Chand & Company Ltd., Delhi.
4. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

1. [http://www.mindtools.com/ page 8.html](http://www.mindtools.com/page 8.html) – 99k
2. <http://www.letstalk.com.in>
3. <http://www.englishlearning.com>
4. <http://learnenglish.britishcouncil.org/en/>
5. <http://swayam.gov.in>

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	15	30
2	15	30
3	18	40
Total	48	100

2.2 APPLIED MATHEMATICS – II

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RATIONALE

Applied mathematics forms the backbone of engineering students. Basic elements of Differential calculus, Integral calculus and Differential Equations have been included in this course. This will develop analytical abilities to apply in engineering field and will provide continuing educational base to the students.

LEARNING OUTCOMES

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

- Compute slope, the equation of tangent and normal to a curve at a point using differentiation.
- Find maximum and minimum values of a function by application of differential calculus..
- Calculate simple integration by using concepts of integration.
- Find the velocity from acceleration and displacement from velocity using integration.
- Evaluate area under curves by using definite integrals
- Calculate the area under a curve and axes.
- Calculate the approximate area under a curve by applying numerical integration using Trapezoidal and Simpson's rules.
- Solve engineering and industrial problems using differential equations.
- Apply differential Equations and numerical methods for higher learning of mathematics and engineering applications.

DETAILED CONTENTS

1. Differential Calculus (40periods)
 - 1.1 Definition of function; Concept of limits (Introduction only) and problems related to four standard limits only.
 - 1.2 Differentiation of x^n , $\sin x$, $\cos x$, $\tan x$, e^x by first principle.
 - 1.3 Differentiation of sum, product and quotient of functions.
 - 1.4 Differentiation of trigonometric functions, inverse trigonometric functions. logarithmic differentiation, successive differentiation (upto 2nd order)
 - 1.5 Application of differential calculus in:

- (a) Rate measures
- (b) Maxima and minima

2. Integral Calculus (26 periods)

- 2.1 Integration as inverse operation of differentiation with simple examples.
- 2.2 Simple standard integrals and related problems
- 2.3 Evaluation of definite integrals with given limits.

$$\text{Evaluation of } \int_0^{\pi/2} \sin^n x \, dx, \int_0^{\pi/2} \cos^n x \, dx, \int_0^{\pi/2} \sin^m x \cos^n x \, dx$$

using formulae without proof (m and n being positive integers only) using pre-existing mathematical models.

- 2.4 Applications of integration: for evaluation of area under a curve and axes (Simple problems).
- 2.5 Numerical integration by Trapezoidal Rule and Simpson's 1/3rd Rule using pre-existing mathematical models.

3. Differential Equations (04 periods)

Definition, order, degree and linearity, of an ordinary differential equation.

4. Statistics (10 periods)

- 4.1 Measures of Central Tendency: Mean, Median, Mode
- 4.2 Measures of Dispersion: Mean deviation, Standard deviation
- 4.3 Co-efficient of rank correlation

INSTRUCTIONAL STRATEGY

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. Students need to be taught the skills needed to use software tools built by experts through multiple problem solving based on the topics that the industry requires. For example they need to know how to use mathematical models that use integration as opposed to learning how integration can be used. Diploma students need to know which tools to use and how to do the job.

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making

RECOMMENDED BOOKS

1. Elementary Engineering Mathematics by BS Grewal, Khanna Publishers, New Delhi
2. Engineering Mathematics Vol. I & II by S Kohli, IPH, Jalandhar
3. Applied Mathematics, Vol. I & II by SS Sabharwal & Dr Sunita Jain, Eagle Parkashan, Jalandhar
4. Engineering Mathematics, Vol I, II & III by V Sundarametal, Vikas Publishing House (P) Ltd., New Delhi
5. Engineering Mathematics, Vol I & II by SS Sastry, Prentice Hall of India Pvt. Ltd., Delhi
6. Engineering Mathematics by Srimanta Pal and Subodh C. Bhunia; Oxford University Press, New Delhi
7. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Periods)	Marks Allotted (%)
1	40	40
2	26	40
3	04	05
4	10	15
Total	80	100

2.3 APPLIED PHYSICS – II

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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

LEARNING OUTCOMES

After undergoing this subject, the students will be able to;

- Differentiate between Transverse and Longitudinal, Periodic and Simple Harmonic Motion.
- Explain the terms: frequency, amplitude, wavelength, wavevelocity,frequency and relation between them.
- Explain various Engineering and Industrial applications of ultrasonics.
- Apply acoustics principles to various types of buildings to get best sound effect.
- Explain the laws of reflection and refraction of light.
- Explain total internal reflection as applied to optical fibers.
- Define capacitance and its unit and solve simple problems using $C=Q/V$
- Explain the role of free electrons in insulators, conductors and semiconductors.
- Explain electric current as flow of charge, the concept of resistance.
- State and apply Ohm's law.
- Calculate the equivalent resistance of a variety of resistor combinations.
- Apply the concept of light amplification in designing of various LASER based instruments and optical sources.
- Apply the use of optical fibre in Medical field and optical fibre Communication.

DETAILED CONENTS

1. Wave motion and its applications (12 periods)
 - 1.1 Wave motion, transverse and longitudinal wave motion with examples, Terms used in wave motion like displacement, amplitude, time period, frequency, wavelength, wave velocity, relationship among wave velocity, frequency and wave length .
 - 1.2 Simple Harmonic Motion (SHM): definition, examples

- 1.3 Cantilever (definition ,formula of time period(without derivation).
- 1.4 Free, forced and resonant vibrations with examples
- 1.5 Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound, methods to control reverberation time.
- 1.6 Ultrasonics – Introduction and their engineering applications(cold welding,drilling,SONAR)
2. Optics (06 periods)
 - 2.1 Reflection and refraction with laws, refractive index, lens formula(no derivation),power of lens(related numerical problems).
 - 2.2 Total internal reflection and its applications, Critical angle and conditions for total internal reflection
 - 2.3 Microscope,Telescope(definition)
 - 2.4 Uses of microscope and telescope.
3. Electrostatics (12 Periods)
 - 3.1 Coulombs law, unit charge,
 - 3.2 Electric field, Electric lines of force(definition and properties),Electric flux,Electric Intensity and Electric potential(definition,formula).Electric field intensity due to a point charge.
 - 3.3 Gauss law(Statement and derivation)
 - 3.4 Capacitor and Capacitance (with formula and units), Series and parallel combination of capacitors (simple numerical problems)
4. Current Electricity (12 Periods)
 - 4.1 Electric Current and its Unit, Direct and alternating current,
 - 4.2 Resistance and Specific Resistance(definition and units) Conductance, Series and Parallel combination of Resistances.
 - 4.3 Ohm’s law (statement and formula),superconductivity(definition only).
 - 4.4 Heating effect of current, Electric power, Electric energy and its units
 - 4.5 Kirchhoff’s laws(statement and formula)
5. Electromagnetism (08 periods)
 - 5.1 Introduction to magnetism, Types of magnetic materials. Dia, para and ferromagnetic materials with examples.

- 5.2 Magnetic field, magnetic intensity, magnetic lines of force, magnetic flux and their units
- 5.3 Electromagnetic induction (definition)
- 6. Semiconductor physics (08 periods)
 - 6.1 Energy bands, Types of materials (insulator, semi conductor, conductor), intrinsic and extrinsic semiconductors, p-n junction diode and its V-I characteristics
 - 6.2 Diode as rectifier – half wave and full wave rectifier (centre tap only)
 - 6.3 Semiconductor transistor; pnp and npn (Introduction only).
- 7. Modern Physics (06 periods)
 - 7.1 Lasers: full form, characteristics, engineering and medical applications of lasers.
 - 7.2 Fibre optics: Introduction to optical fibers(definition ,parts),applications of optical fibers in different fields.
 - 7.3 Introduction to nanotechnology(definition of nanomaterials with examples) and its applications.

LIST OF PRACTICALS (To perform minimum seven experiments)

1. To find the time period of a simple pendulum
2. To determine and verify the time period of Cantilever
3. To verify ohm's laws by plotting a graph between voltage and current.
4. To verify laws of resistances in series combination.
5. To verify laws of resistance in parallel combination.
6. To find resistance of galvanometer by half deflection method
7. To verify laws of reflection of light using mirror.
8. To identify different components like resistance, capacitor, diode.
9. To study colour coding scheme of resistance.

INSTRUCTIONAL STATREGY

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 of waves, sound, light, electrostatics, dc circuits, electromagnetism, and semiconductor physics etc to develop proper understanding of the physical phenomenon. Use of demonstration can make the subject interesting and develop scientific temper in the students.

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making
- Actual laboratory and practical work, exercises and viva-voce

RECOMMENDED BOOKS

- 1) Text Book of Physics (Part-I, Part-II); N.C.E.R.T., Delhi
- 2) Concepts in Physics by HC Verma, Vol. I & II, Bharti Bhawan Ltd. New Delhi
- 3) Practical Physics, by C. L. Arora, S Chand Publication
- 4) Engineering Physics by PV Naik, Pearson Education Pvt. Ltd, New Delhi
- 5) e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allowed (Periods)	Marks Allotted (%)
1	12	20
2	06	10
3	12	16
4	12	16
5	08	12
6	08	14
7	06	12
Total	64	100

2.4 BASIC ELECTRONICS

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RATIONALE

This subject gives the knowledge of fundamental concepts and principles of basic electronics and aims at providing the students with basic understanding of various types of materials such as conductors, semiconductors and insulators, extrinsic and intrinsic semi-conductors, p-n junction, need of rectifiers, significance and use of filters in rectifiers, basic structure and working principle of tunnel diodes, LEDs, varactor diodes, LCD; working of transistors in various configurations; fundamental knowledge of FETs and MOSFETs etc. 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.

LEARNING OUTCOMES :

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

- Identify and able to take readings on various electronics equipments(multimeter, CRO, signal generator, LCR meter)
- Plot the VI characteristics of pn junction diode and Zener diode
- Measure voltage gain, input and output impedance in a single state CE amplifier circuit.
- Fabricate half wave, full wave and bridge rectifier and observe waveforms of each
- Plot the waveforms of the rectifier circuit with different filters
- Plot input and output characteristics of transistor in CB and CE mode
- Plot the characteristics of FET based amplifier
- Measure voltage gain, input and output impedance in a single state CE amplifier circuit.

DETAILED CONTENTS

1. Semiconductor Physics: (08 Periods)
 - 1.1 Review of basic atomic structure and energy levels, concept of insulators, conductors and semi conductors, atomic structure of Germanium (Ge) and Silicon (Si), covalent bonds
 - 1.2 Concept of intrinsic and extrinsic semi conductor, process of doping.
 - 1.3 Energy level diagram of conductors, insulators and semi conductors; minority and majority charge carriers.
 - 1.4 P and N type semiconductors and their conductivity, effect of temperature on conductivity of intrinsic semi conductors.

2. Semiconductor Diode: (10 Periods)
- 2.1 PN junction diode, mechanism of current flow in PN junction, forward and reverse biased PN junction, potential barrier, drift and diffusion currents, depletion layer, concept of junction capacitance in forward and reverse biased condition.
 - 2.2 V-I characteristics, static and dynamic resistance and their value calculation from the characteristics.
 - 2.3 Application of diode as half-wave, full wave and bridge rectifiers. Peak Inverse Voltage, rectification efficiencies and ripple factor calculations, shunt capacitor filter, series inductor filter, LC and π filters.
 - 2.4 Types of diodes, characteristics and applications of Zener diodes. Zener and avalanche breakdown
 - 2.5 Clipping and Clamping Circuits
3. Introduction to Bipolar-Transistors: (10 Periods)
- 3.1 Concept of a bipolar transistor, its structure, PNP and NPN transistors, their symbols and mechanism of current flow; Current relations in a transistor; concept of leakage current;
 - 3.2 CB, CE, CC configurations of a transistor; Input and output characteristics in CB and CE configurations; input and output dynamic resistance in CB and CE configurations; Current amplification factors. Comparison of CB, CE and CC Configurations;
 - 3.3 Transistor as an amplifier in CE Configuration; concept of DC load line and calculation of current gain and voltage gain using DC load line.
4. Transistor Biasing Circuits: (04 Periods)
- Concept of transistor biasing and selection of operating point. Need for stabilization of operating point. Different types of biasing circuits.
5. Single Stage Transistor Amplifier: (08 Periods)
- Single stage transistor amplifier circuit, concept of dc and ac load line and its use. Explanation of phase reversal of output voltage with respect to input voltage.
6. Field Effect Transistors (08 Periods)
- Construction, operation and characteristics of FETs and their applications.
- 6.1 Construction, operation and characteristics of a MOSFET in depletion and enhancement modes and its applications.
 - 6.2 C MOS - advantages and applications
 - 6.3 Comparison of JFET, MOSFET and BJT.

LIST OF PRACTICALS

1. Operation and use of the following instruments:
Multi-meter, CRO, Signal generator, LCR meter, Regulated Power Supply by way of taking readings of relevant quantities with their help.
2. Plotting of V-I characteristics of a PN junction diode
3. Plotting of V-I characteristics of a Zener diode
4. To observe output of clipping and clamping circuits.
5. Measurement of the voltage gain, input and output impedance in a single state CE amplifier circuit.
6. Design of following circuit on breadboard and observe the output of :
 - a. Half-wave rectifier circuit using one diode
 - b. Full-wave rectifier circuit using two diodes
 - c. Bridge-rectifier circuit using four diodes
7. Plotting of the wave shape of full wave rectifier with
 - a. Shunt capacitor filter
 - b. Series inductor filter
8. Plotting of input and output characteristics and calculation of parameters of transistors in CE configuration.
9. Plotting of input and output characteristics and calculation of parameters of transistors in CB configuration.
10. Measurement of voltage gain, input and output impedance in a single state CE amplifier circuit.
11. Plotting of V-I characteristics of a FET based amplifier.

INSTRUCTIONAL STRATEGY

The aim of this subject is to provide the knowledge of the fundamental concepts related to basic electronics. The teacher should give more emphasis on understanding of concepts and the measuring of various terms used in the subject. The students be made familiar with diodes, transistors, resistors, capacitors, inductors etc. and various measuring instruments such as Multi-meter, CRO, Signal generator, LCR meter, Regulated Power Supply etc. Practical exercises should be included to reinforce the various concepts. Practical applications of semiconductor diodes, transistors, field effect transistors etc must be elucidated to the students.

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making
- Actual laboratory and practical work, model/prototype making, assembly and disassembly exercises and viva-voce

RECOMMENDED BOOKS

1. Basic Electronics and Linear Circuit by NN Bhargava, Kulshreshta and SC Gupta, Tata McGraw Hill Education Pvt Ltd., New Delhi.
2. Principles of Electrical and Electronics Engineering by VK Mehta; S Chand and Co., New Delhi
3. Electronic Components and Materials by SM Dhir, Tata McGraw Hill Education Pvt Ltd., New Delhi.
4. Principles of Electronics by SK Bhattacharya and RenuVig, SK Kataria and Sons, Delhi
5. Electronics Devices and Circuits by Millman and Halkias; McGraw Hill.
6. Principles of Electronics by Albert Paul Malvino; Tata McGraw Hill Education Pvt Ltd., New Delhi.
7. Basic Electronics – Problems and Solutions by Albert Malvino and David J. Bates; Tata McGraw Hill Publishing Company Pvt Ltd, New Delhi.
8. Basic Electronics by J.S. Katre, Sandeep Bajaj, Tech. Max. Publications, Pune.
9. Electronic Principles by SK Sahdev, DhanpatRai& Co., New Delhi
10. Analog Electronics by JC Karhara, King India Publication, New Delhi
11. Electrical Devices and Circuits by Rama Reddy, NarosaPulishing House Pvt. Ltd., New Delhi
12. Electronic Devices and Circuits by Dharma Raj Cheruku and BattulaTirumala Krishna: Pearson Education (Singapore) Pvt Ltd., Indian Branch, 482 F.I.E Patparganj, Delhi- 92
13. Basic Electronics by JB Gupta, SK Kataria and Sons, New Delhi
14. Grob’s Basic Electronics- A text Lab Manual (Special Indian Edition) by Schultz, Tata McGraw Hill Education Pvt Ltd, New Delhi.
15. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	8	18
2	10	22
3	10	20
4	4	8
5	8	16
6	8	16
Total	48	100

2.5 COMPUTER WORKSHOP

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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 software installation and maintenance to make him diagnose software faults.

LEARNING OUTCOMES

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

- Identify various computer components.
- Define various parts of computer.
- Describe and differentiate various Motherboard Processors, RAM, Secondary storage devices.
- Install various components of computer.
- Maintain and repair (troubleshoot) various computer components.
- Assemble and de-assemble computer system.
- Install operating system i.e. MS-Window and Linux.
- Diagnose the various faults in computer system i.e. SMPS, HDD, RAM.
- Identify various cables used for connection.
- Outline and underline the dimensions (space requirements) for setting a computer centre.
- Set-up a low cost computer centre.
- Install and configure various application software.
- Define and identify various virus and clean the system using various antivirus software.

DETAILED CONTENTS

Part-A (Hardware)

1. Familiarization with various components and parts of personal computer: Mother board details, hard disk drive, floppy disk drive. CD ROM drive, DVD, Blucray 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, Modems, connectors and cables
2. Assembly and Disassembling of PCs, power supply, linear power supply and switch mode power supply, trouble shooting of SMPS.
3. Setting up of basic infrastructure for computers (including power layout, air conditioning, earthing etc.

Part-B (Software)

4. 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

5. Installation of latest version of application software proprietary/free software like MS-Office/open office, Adobe Photoshop, Corel Draw, Macromedia Flash etc.
6. Installation and configuration of latest version of database software like Oracle/MySQL/SQL Server etc.
7. Introduction to Virus/Spyware/Worm/Trojan Horse, their detection, prevention and cure.
8. Installation, uninstallation and use of Antivirus software.
9. Visit to computer manufacturing industry

INSTRUCTIONAL STRATEGY

As the subject is practice oriented, sufficient exercises on assembling and disassembling of computer system should be given. Field visits to the places where assembly of computers is taking place will be helpful to the students. Visits to the manufacturing units of CVT or UPS will also be helpful to the students.

MEANS OF ASSESSMENT

- Workshop exercise
- Software installation, operation and viva-voce

RECOMMENDED BOOKS

- 1) PC Upgrade and Maintenance Guide by Mark Minasi, BPB Publication
- 2) Hardware Bible by Winn Rosch, Techmedia Publications
- 3) IBM PC and Clones by B GovindaRajalu. Tata McGraw Hill Education Pvt Ltd, New Delhi
- 4) Electronic Instrumentation and Measurement Techniques by WD Cooper and Adhelfrics. Prentice Hall of India, New Delhi
- 5) Common Computer Circuits and Faults Vol. 1 by M. Lotia, BPB Publications, New Delhi
- 6) Monitor and Fault Diagnosis Vol. 1 and II. M. Lotia, BPB Publications, New Delhi
- 7) Unix System Administration by Unleashed. Tech. Media Publications, New Delhi
- 8) Understanding Unix Tech Media Publications, New Delhi
- 9) Linux Unleashed Tech Media Publications, New Delhi
- 10) Unix Configuration and Installation DPB Publications, New Delhi
- 11) Teach Yourself Unix BPB Publications, New Delhi
- 12) Study Guide Windows Server and Workstation 4 Tech Media Publications, New Delhi
- 13) Complete Guide to Window and Workstation by Peter Norton. Tech Media Publications, New Delhi
- 14) Complete Guide to Windows by Peter Norton. Tech. Media Publications, New Delhi
- 15) Training Guide for Windows by MCSE, Tech Media Publications, New Delhi
- 16) e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

2.6 ENVIRONMENTAL STUDIES

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RATIONALE

A diploma holder must have knowledge of different types of pollution caused due to industries and constructional activities so that they may help in balancing the ecosystem and controlling pollution by various control measures. He should also be aware of environmental laws related to the control of pollution. He should know how to manage the waste. Energy conservation is the need of hour. He should know the concept of energy management and its conservation.

LEARNING OUTCOMES

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

- Comprehend the importance of ecosystem and sustainable
- Demonstrate interdisciplinary nature of environmental issues
- Identify different types of environmental pollution and control measures.
- Take corrective measures for the abatement of pollution.
- Explain environmental legislation acts.
- Define energy management, energy conservation and energy efficiency
- Demonstrate positive attitude towards judicious use of energy and environmental protection
- Practice energy efficient techniques in day-to-day life and industrial processes.
- Adopt cleaner productive technologies
- Identify the role of non-conventional energy resources in environmental protection.
- Analyze the impact of human activities on the environment

DETAILED CONTENTS

1. Basics of ecology, eco system- concept, structure and importance of ecosystem, Carbon, Nitrogen, Sulphur cycle. Sustainable development (03 periods)
2. Conservation of land reforms, preservation of species, prevention of advancement of deserts and lowering of water table, rain water harvesting, Acid Rain, maintenance of ground water, Water supply engineering, Deforestation – its effects and control measures. (04 periods)
3. Pollution: Sources of pollution - natural and man made. Classification of pollutants, Causes, effects and control measures of pollution (air, water, noise, soil, radioactive and nuclear). Prevention of Pollution: Introduction to Cleaner Production Technologies, physical, chemical and biological treatment of pollutants,

photocatalytic degradation of pollutants, Waste Minimization Techniques – Chemical degradation of waste, Concept of Zero Discharge. (12 periods)

4. Solidwastemanagement, classificationofrefusematerial,sources, effects and control measures.Introduction to E-waste Management (06 periods)
5. Environmental Legislation - Water (prevention and control of pollution) Act 1974, Air (Prevention and Control of Pollution) Act 1981 and Environmental Protection Act 1986, Role and Function of State Pollution Control Board, Environmental Impact Assessment (EIA). Introduction to Energy Conservation Act 2001 and Energy Conservation (Amendment) Act 2010 & its importance. (08 periods)
6. Energy Conservation: Introduction to Energy Management, Energy Conservation, Energy efficiency & its need.. Role of Non-conventional Energy Resources (Solar Energy, Wind Energy, Bio Energy, Hydro Energy) in environmental protection. Impact of Energy Usage on Environment – Global Warming, Green House Effect, Depletion of Ozone Layer. (10 periods)
7. Eco-friendly Material: Recycling of Material, Concept of Green Buildings, (05periods)

INSTRUCTIONAL STRATEGY

In addition to theoretical instructions, different activities pertaining to Environmental Studies like expert lectures, seminars, visits etc. may also be organized.

RECOMMENDED BOOKS

1. EnvironmentalandPollutionAwareness bySharmaBR;SatyaPrakashan, NewDelhi.
2. EnvironmentalProtectionLawandPolicyinIndiabyThakurKailash;DeepandDeep Publications,NewDelhi.
3. Environmental Pollution by Dr. RK Khitoliya; S Chand Publishing, New Delhi
4. Environmental Science by Deswal and Deswal; Dhanpat Rai and Co. (P) Ltd. Delhi.
5. Engineering Chemistry by Jain and Jain; Dhanpat Rai and Co. (P) Ltd. Delhi.
6. Environmental Studies by Erach Bharucha; University Press (India) Private Ltd., Hyderabad.
7. EnvironmentalEngineeringandManagementbySureshK Dhamija;SKKatariaand Sons, NewDelhi.
8. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

SUGGESTED DISTRIBUTION OF MARKS

TopicNo.	TimeAllotted (Hrs)	MarksAllotted (%)
1	03	05
2	04	08
3	12	25
4	06	12
5	08	18
6	10	22
7	05	10
Total	48	100

2.7 DESKTOP PUBLISHING

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RATIONALE

This course will enable the students to familiarize with the features and use of application packages such as Page Maker, Corel Draw or any other equivalent latest package(s). They will develop skills in handling the software.

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.

LEARNING OUTCOMES

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

- Explain the concepts related to desktop publishing software and publishing markets.
- Design visiting cards and advertisement pamphlets.
- Design wedding cards, flex and printed designer boxes.
- Design multi-page document and drawing pictures for the books.
- Add special effects in drawing.
- Generate special effects to various types of text in various documents.
- Add various symbols to a design and creating different patterns.

TOPICS TO BE EXPLAINED THROUGH DEMONSTRATION

1. Introduction

Overview of Desktop Publishing (DTP), Introduction of various keys in the keyboard and their functions.

2. Page Maker /Publisher/Scribus

Document needs, creating a document, editing and formatting a document, saving and printing a document, inserting text and graphics, inserting columns, fonts and styles, integrating images and graphics from a drawing package in the document, making transparencies, elements, frame option, arrange text, image control, expert tracking, indent/tabs, styles, type styles, layout, tool bar (page setting)

3. Corel Draw/Inkscape

3.1 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
 - Insert object, paste special, copy attributes from select all, drawing objects, selecting objects
 - Page setup, insert/delete page, use of layers, roll up, grid and scale set up, guideline set up
- 3.2 Formatting objects
- Arranging objects: align, order, group, ungroup
 - Arranging objects: combine, break apart, 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
 - Working with text: Character, paragraph text, frame, setting of tabs, indents, bullets, spacing in paragraph text

LIST OF PRACTICALS

1. Using windows explorer and other windows elements
2. Creating and opening a document in page maker/publisher/scribus
3. Formatting and editing a document
4. Saving and printing a given document
5. Insertion of text and graphics in a given document from external source
6. Using columns utility, to give the document column look
7. Using various fonts and styles to make a document more beautiful
8. Use of page maker to make transparencies
9. Formatting a given file by using undo/redo, repeat, cut, copy, paste, delete, duplicate and clone utilities
10. Inserting objects in the drawing, aligning, ordering, grouping and ungrouping of those objects
11. Use of combine, break apart, weld, intersection, trim and separate tools in a given drawing
12. Use of mode edit tools i.e. to line, to curve, to stretch, and rotate
13. Creating special effects i.e. transform roll-up, envelop roll up, add perspective, extrude roll up, contour roll up, power line, power clip, clear effects
14. To insert character and paragraph text in a drawing and frame, setting of tabs, indents, bullets and spacing in paragraph text
15. Filling of text to a given path, aligning it to base line, straighten text and edit text
16. Using tools such as spell checker, and thesaurus
17. Using find and replace text utility and type assist
18. Adding various symbols to a drawing and creating different patterns.

INSTRUCTIONAL STRATEGIES

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 page maker, corel-draw etc.

MEANS OF ASSESSMENT

- Actual laboratory and practical work, exercises and viva-voce
- Software installation, operation, development and viva-voce

RECOMMENDED BOOKS

1. Learning Desktop Publishing by Ramesh Bangia; Khanna Book Publishing Co. Pvt. Ltd., New Delhi
2. Desktop Publishing From A to Z by Bill Grout and Osborne; McGraw Hill
3. DTP (Desktop Publishing) for PC user by Houghton; Galgotia Publishing House Pvt. Ltd., Daryaganj, New Delhi.
4. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>