

**DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING
&
CERTIFICATE IN DATA ENTRY & WORD PROCESSING (CDE)**

Semester-I							
S.No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH-111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	CS-111	Computer Fundamentals	3	0	2	5	4
6	CS-112	Troubleshooting & Maintenance Lab	0	0	4	4	2
7	CS-113	Internet Applications Lab	0	0	4	4	2
Total			17	1	14	32	25

**DIPLOMA (ICD) IN CHEMICAL TECHNOLOGY
&
CERTIFICATE IN PAPER TECHNOLOGY**

Semester-I							
S.No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH-111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	WS-112	Workshop Practice	0	0	4	4	2
6	ME-111	Engineering Drawing	0	0	4	4	2
7	CH-111	Pulping & Bleaching Technology	2	0	2	4	3
Total			16	1	14	31	24

**DIPLOMA(ICD) IN CIVIL ENGINEERING
&
CERTIFICATE PROGRAMME IN BUILDING MAINTENANCE**

DIPLOMA (ICD) IN ELECTRONICS AND COMMUNICATION ENGINEERING

Semester-I							
S.No	Sub. Code	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH -111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	WS-111	Workshop Practice-I	0	0	4	4	2
6	ME-111	Engineering Drawing	0	0	4	4	2
7	CS-111	Computer Fundamentals	3	0	2	5	4
Total			17	1	14	32	25

**&
CERTIFICATE PROGRAMME IN SERVICING & MAINTENANCE OF ELECTRONIC INSTRUMENTS(CSME)**

Semester-I							
S.No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1.	AM-111	Mathematics- I	4	1	0	5	5
2.	PH-111	Physics-I	4	0	2	6	5
3.	CY-111	Chemistry-I	4	0	2	6	5
4.	HU-111	Communication Skills-I	2	0	0	2	2
5.	EE-111	Fundamental of Electrical Engineering	3	0	2	5	4
6.	WS-112	Workshop Practice	0	0	4	4	2
7.	EC-111	Electronic Devices	2	0	2	4	3
Total			19	1	12	32	26

**DIPLOMA (ICD) IN ELECTRONICS AND COMMUNICATION ENGINEERING
&
CERTIFICATE PROGRAMME IN TELEVISION MECHANIC (CTV)**

Semester-I							
S.No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH-111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	EC-111	Electronic Devices	2	0	2	4	3
6	EE-111	Fundamentals of Electrical Engineering	3	0	2	5	4
7	WS-112	Workshop Practice	0	0	4	4	2
Total			19	1	12	32	26

**DIPLOMA (ICD) IN ELECTRICAL ENGINEERING
&
CERTIFICATE IN ELECTRICIAN (CEN)**

Semester-I							
S.No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH-111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	EE-112	Electrical Workshop Practice-I	0	0	4	4	2
6	EE-113	Basic Electrical Engineering	3	0	2	5	4
7	ME-111	Engineering Drawing	0	0	4	4	2
Total			17	1	14	32	25

**DIPLOMA (ICD) IN INSTRUMENTATION AND CONTROL ENGINEERING
&
CERTIFICATE IN SERVICING & MAINTENANCE OF MEDICAL INSTRUMENTS**

Semester-I							
S.No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH-111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	IE-111	Instrumentation Workshop Practice	0	0	2	2	1
6	EE-113	Basic Electrical Engineering	3	0	2	5	4
7	ME-111	Engineering Drawing	0	0	4	4	2
Total			17	1	12	30	24

**DIPLOMA (ICD) IN FOOD TECHNOLOGY
&
CERTIFICATE IN FOOD PROCESSING & PRESERVATION(CFP)**

Semester-I							
S.No	Sub	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH-111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	WS-111	Workshop Practice-I	0	0	4	4	2
6	ME-111	Engineering Drawing	0	0	4	4	2
7	FT -111	Introduction to Food Technology	3	0	2	5	4
Total			17	1	14	32	25

**DIPLOMA(ICD) IN MECHANICAL ENGINEERING
&
CERTIFICATE IN AIR CONDITIONING MECHANIC (CAC)**

Semester-I							
S.No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH -111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	WS-111	Workshop Practice-I	0	0	4	4	2
6	ME-111	Engineering Drawing	0	0	4	4	2
7	CS-111	Computer Fundamentals	3	0	2	5	4
Total			17	1	14	32	25

**DIPLOMA (ICD) IN MECHANICAL ENGINEERING
&
CERTIFICATE IN AUTO AND FARM EQUIPMENT MECHANIC (CAF)**

Semester-I							
S.No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH -111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	WS-111	Workshop Practice-I	0	0	4	4	2
6	ME-111	Engineering Drawing	0	0	4	4	2
7	CS-111	Computer Fundamentals	3	0	2	5	4
Total			17	1	14	32	25

**DIPLOMA (ICD) IN MECHANICAL ENGINEERING
&
CERTIFICATE IN FOUNDRY AND FORGING (CFF)**

Semester-I							
S.No	Sub	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH -111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	WS-111	Workshop Practice-I	0	0	4	4	2
6	ME-111	Engineering Drawing	0	0	4	4	2
7	CS-111	Computer Fundamentals	3	0	2	5	4
Total			17	1	14	32	25

**DIPLOMA (ICD) IN MECHANICAL ENGINEERING
&
CERTIFICATE IN TOOL AND DIE TECHNOLOGY(CTD)**

Semester-I							
S.No	Sub	Subject Name	L	T	P	Hrs.	Credits
1	AM-111	Mathematics- I	4	1	0	5	5
2	PH-111	Physics-I	4	0	2	6	5
3	CY-111	Chemistry-I	4	0	2	6	5
4	HU-111	Communication Skills-I	2	0	0	2	2
5	WS-111	Workshop Practice-I	0	0	4	4	2
6	ME-111	Engineering Drawing	0	0	4	4	2
7	CS-111	Computer Fundamentals	3	0	2	5	4
Total			17	1	14	32	25

**DIPLOMA (ICD) IN MECHANICAL ENGINEERING
&
CERTIFICATE IN WELDING (CWG)**

Semester-I								
S.No	Sub Code	Subject Name	L	T	P	Hrs.	Credits	
1	AM-111	Mathematics- I	4	1	0	5	5	
2	PH -111	Physics-I	4	0	2	6	5	
3	CY-111	Chemistry-I	4	0	2	6	5	
4	HU-111	Communication Skills-I	2	0	0	2	2	
5	WS-111	Workshop Practice-I	0	0	4	4	2	
6	ME-111	Engineering Drawing	0	0	4	4	2	
7	CS-111	Computer Fundamentals	3	0	2	5	4	
Total			17	1	14	32	25	

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6.	Computer Science	CS-111	10-11
7.	Electronics Engineering	EC-112	12
8.	Electrical Engineering	EE-111 to EE-112	13-15
9.	Food Engg& Technology	FT-111	16
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12.	Workshop	WS-111/WS-121, WS-122	19

Title of the course : CHEMISTRY-I
Subject Code : CY-111
 Weekly load : 6 LTP 4-0-2
 Credit : 5 (Lecture 4; Practical 1)

Unit	Course Outlines	Lectures
Unit I	Atomic Structure Introduction to atom and its constituent particles, Bohr's model of atom, Line spectrum of hydrogen, Dual nature of radiation, de Broglie's relationship, Uncertainty principle, Quantum numbers, Shapes of orbitals, Pauli's exclusion principle, Aufbau Energy ranking rule, Hund's rule, Electronic configuration of atoms	08
	Modern periodic table Modern periodic table, Periodic properties (ionization potential, electron affinity, atomic and ionic radii), Variation of periodic properties along a period and group, Introduction to s and p-block elements	06
	Chemical Bonding Types of chemical bond (ionic, covalent, coordinate), Lewis structure, Valence bond theory, VSEPR theory, Hybridization, Molecular orbital theory of homonuclear diatomic molecules, Vanderwaal forces, Hydrogen bond, Metallic bond	08
	Chemical and Ionic Equilibrium Law of chemical equilibrium, Le Chatelier's principle, Law of mass action, Equilibrium constant, Ionic equilibrium – ionization of acids and bases, Strong and weak electrolytes, Degree of ionization, Concept of pH, Hydrolysis of salts, Common Ion effect and Solubility product, Concept of acids and bases, Buffer solutions	09
Unit II	Chemical Thermodynamics Concepts of extensive and intensive properties, State functions, First law of Thermodynamics: Internal energy, Enthalpy, Heat capacity and Specific heat, Applications of First law of thermodynamics, Hess's law of constant heat summation, Second law of thermodynamics: Entropy, Free energy, Spontaneity of a chemical reaction, Free-energy change and Chemical equilibrium	08
	Organic Chemistry Classification and IUPAC nomenclature of organic compounds, Inductive effect, Electromeric effect, Resonance and Hyperconjugation, Electrophiles and Nucleophiles Reaction Intermediates - carbocations, carbanions, free radicals, Types of organic reactions, Stereoisomerism: Optical, Geometrical and Conformational	14
	Environmental chemistry Environmental pollutants: soil, water and air pollution, Chemical reactions in atmosphere, Kinds of smog, Major atmospheric pollutants, Acid rain, Ozone and its reactions, Effects of the depletion of ozone layer, Green house effect and Global warming – Industrial air pollution, Green chemistry as an alternative tool for reducing pollution	07

Recommended Books:

Author	Title	Publisher
SP Jauhar	Chemistry for class XI and XII	NCERT New Delhi
S C Khetarpal et.al.	Modern ABC of Chemistry (class XI and XII)	MBD
P D Sharma et.al.	Pardeep's New Course of Chemistry (class XI and XII)	Prdeep
	Effectual Chemistry (class XI and XII)	JBD

LIST OF PRACTICALS

- To prepare the standard solution of oxalic acid or potassium dichromate.
- To determine the strength of given HCl solution by titration against NaOH solution using Phenolphthalein indicator.
- To determine the total hardness of water sample in terms of CaCO₃ by EDTA titration method using EriochromeBlack-T indicator.
- To determine the pH of given sample.
- To analyse inorganic salt for acidic and basic radicals among the following.
 - Basic Radicals:
 NH₄⁺, Pb⁺⁺, Cu⁺⁺, Bi⁺⁺⁺, Cd⁺⁺, As⁺⁺⁺, Sb⁺⁺⁺, Sn⁺⁺, Al⁺⁺⁺, Fe⁺⁺⁺, Cr⁺⁺⁺, Mn⁺⁺, Zn⁺⁺, Co⁺⁺, Ni⁺⁺, Ba⁺⁺, Sr⁺⁺, Ca⁺⁺, Mg⁺⁺
 - Acid Radicals:
 CO₃⁻, S⁻, SO₃⁻, CH₃COO⁻, NO₂⁻, NO₃⁻, Cl⁻, Br⁻, I⁻, SO₄⁻

Title of the course : **Communication Skills-I**
Subject Code : **HU-111**
 Weekly load : 2 LTP 2-0-0
 Credit : 2 (Lecture 2; Practical 0)

Unit	Course Description	Lecture(s)
Unit- I	Prescribed Text -Following Chapters only: Chapter 1 (The Judgement-seat of Vikramaditya) Chapter 2 (The Selfish Giant) Chapter 8 (J.C. Bose) Chapter 9 (The Story of the Sea) Chapter 11 (The Escape) Chapter 15 (Self- portrait) Intensive study of the chapters: Vocabulary-Understanding meanings of new words, Comprehension- Responding to the questions from the text, Summarizing the themes/ central ideas of the text, Composition Exercises	16
Unit- II	Application of Grammar Tenses, Translation from Vernacular to English, Do as directed (Active/ Passive Voice, Direct/ Indirect Narration, Affirmative/ Negative/ Assertive Sentences, Question Tag, Use of Articles, Prepositions, Conjunctions), Words often confused, Use of synonyms and antonyms, One word substitutes	16

Recommended Books:

Author	Title	Publisher
Text Book Menon, K.P.K.	<i>Contemporary English Prose</i>	Oxford University Press
Reference Books Wren, P.C. & H. Martin	<i>High School English Grammar & Composition</i>	S. Chand & Company Ltd.
Sinclair, John	<i>Collins Cobuild English Grammar</i>	Collins
Ghosh, R.N., K.W. Moody & S. R. Inthira	<i>A Course in Written English</i>	NCERT
Best, Wilford D	<i>The Students' Companion</i>	Rupa

Title of the course : **Mathematics - I**
Subject Code : **AM - 111**
 Weekly load : 5 Hrs. LTP 4-1-0
 Credit : 5 (Lecture 4; Tutorial 1; Practical 0)

Unit	Course outlines	Lectures
Unit-I	Trigonometry Introduction to trigonometric formulas. Trigonometric ratios of multiple and sub-multiple angles (2A, 3A, A/2). Product formulae, conversion from sum or difference to product and vice-versa (without proof). Solutions of simple trigonometric equations. Inverse trigonometric functions and their properties.	10
	Algebra Arithmetic progression, geometric progression, arithmetico-geometric series. Special series: $\sum n$, $\sum n^2$, $\sum n^3$. Binomial theorem for positive integral index (without proof), general and particular terms. Binomial theorem for any index (without proof), first and second approximation, simple problems.	12
	Complex Numbers Complex number in the form of a+ib, Argand diagram, polar form and exponential form, algebra of complex numbers, modulus and argument of a complex number, square root of a complex number, cube root of unity. De-Moivre's theorem (without proof) and simple problems.	8
Unit-II	Straight Line Distance and section formulae. Equation of straight line in various standard forms, intersection of two straight lines, angle between two lines, condition of parallelism and perpendicularity, perpendicular distance formula. Equations of angle bisectors of two intersecting lines.	10
	Circle General equation of a circle, diameter form, centre and radius of a circle, circle through three non-collinear points, tangent and normal to a circle at a given point on it. Intersection of a straight line and a circle. Orthogonal circles.	8
	Conic Section Parabola, ellipse and hyperbola. To find equation when directrix, focus and eccentricity are given. Estimating focus, directrix, latus-rectum, axes, eccentricity, vertex etc. when equation of the conic is given.	12

Recommended Books:

Author	Title	Publisher
Shanti Narayan	Text books on Mathematics for XI	NCERT New Delhi
S L Loney	Coordinate Geometry	S. Chand and Co.
	Coordinate Geometry	A. I. T.B.S.

Title of the course : PHYSICS- I
Subject Code : PH-111
 Weekly load : 6 LTP 4-0-2
 Credit : 5 (Lecture 4; Practical 1)

Theory

Unit	Course outlines	Lectures
Unit-I	UNITS AND MEASUREMENTS Need for measurements, system of units, S.I. units, fundamental and derived units. Dimensional formula, dimensional equations and their applications. Error in Physical measurements-causes & types. Combination of errors (qualitative ideas). Numerical Problems	08
	VECTOR ANALYSIS Scalars and vectors, vectors in two and three dimensions, unit vector, laws of vector addition, Resolution of a vector in a plane, rectangular components, scalar and vector products. Numerical Problems	08
	DESCRIPTION OF MOTION Motion in two dimensions, projectile motion, uniform circular motion, qualitative concepts of torque, angular momentum, conservation of angular momentum, centripetal and centrifugal forces. Numerical Problems	08
	LAWS OF MOTION Laws of motion, conservation of linear momentum, qualitative concepts of rocket propulsion. Friction and its cause, Static and kinetic friction, self-adjusting nature of friction, laws of limiting friction, rolling friction, angle of friction and angle of repose, methods to reduce friction. Numerical Problems	08
Unit-II	GRAVITATION Universal law of gravitation, Inertial and gravitational mass, relation between g and G, variation of acceleration due to gravity (with altitude and depth), orbital velocity, escape velocity, elementary ideas of geo-stationary satellite. Numerical Problems	08
	SIMPLE HARMONIC MOTION Periodic motion, simple harmonic motion (S.H.M.) K.E. and P.E. in S.H.M., simple pendulum and oscillations of mass attached to vertical spring. Concepts of seconds pendulum, Wave motion, its kinds and properties, speed, frequency, amplitude, time period and displacement of wave, principle of superposition. Numerical Problems	08
	PROPERTIES OF MATTER Interatomic and intermolecular forces, elastic properties, Hooke's law, Three moduli of elasticity, Poisson's ration, surface tension and surface energy, angle of contact, examples of drops and bubbles, capillary rise, Viscosity, Stokes law (treatment by dimensional analysis), Streamline and turbulent flow, Bernoulli's theorem. Numerical Problems	08
	HEAT AND THERMODYNAMICS First law of thermodynamics, specific heat at constant volume and constant pressure of ideal gas, relation between Cp and Cv. Thermodynamic processes (reversible, irreversible, isothermal and adiabatic), second law of thermodynamics. Thermal conductivity, black body radiation, Wien's law, Stefan's law, Newton's law of cooling. Numerical Problems	08

Recommended Books:

Author	Title	Publisher
K L Gomber and K L Gogia	Fundamental Physics Class (XI)	Pardeep Publications
Haliday and Resnick and Walker	Fundamental of Physics	John Wiley & Sons
S. K. Gupta	abc of Physics, Class (XI)	Modern Publications

List of Experiments

- To measure the length, breadth and height of a geometrical body using Vernier Calipers and to find its volume.
- To measure the diameter of a wire by using a screw gauge and to find its area of cross-section.
- To measure the radius of curvature of a given lens / mirror by using Spherometer.
- To determine the density of a given body using physical balance.
- To determine the area of cross-section of a given small object using Travelling microscope.
- To determine the value of "g" by Simple Pendulum.
- To find the coefficient of friction between wood and glass using a horizontal surface.
- To determine the coefficient of viscosity of glycerin by Stokes method.
- To determine the surface tension of water using capillary rise method.
- To determine the force constant/spring constant using Hook's Law.
- To determine the Young's modulus of the material of a rectangular bar by bending.
- To determine the value of "g" at a place by using free fall apparatus.

Title of the course : **Pulping and Bleaching Technology**
Subject Code : **CH-111**
 Weekly load : 2 LTP 2-0-2
 Credit : 3 (Lecture 2; Tutorial 0 ; Practical 1)

Unit	Course outlines	Lecture
Unit-I	Introduction Definition of pulping as a fiber separation process, classification of raw materials used in paper making process (wood, non wood and agricultural residues)	03
	Raw material preparation Brief study of debarking, chipping and chip screening operations, operating procedures and safeguards of chipper and chip screens.	03
	Pulping equipments Different types of digesters: Batch and continuous digesters, difference between batch and continuous digesters, Heating methods: Direct and Indirect Methods, Digester room operations like Chip filling, liquor charging, digester relief and blow down operations.	04
	Pulping Methods Different pulping processes like chemical, mechanical and semi chemical pulping. Alkaline Pulping: Description of soda and kraft pulping processes, pulping of non wood raw materials, Introduction to semi chemical pulping processes like CMP and CTMP.	04
Unit-II	Bleaching of Pulp Fundamentals of pulp bleaching, important bleaching agents; their advantages and disadvantages. Brightness as a measure of pulp bleaching. Storage, handling and safety of chlorine and chlorine based bleaching agents, introduction to chlorine free bleaching.	07
	Bleaching equipments and sequences Introduction of common bleaching sequences, Flow sheets for important bleaching sequences like CE, CEHDED, CEDED, OCEDED, CEHP, CED, CEHH, CEHD with emphasis on operational measures and equipments used.	07

Recommended Books:

Author	Title	Publisher
G.A. Smook	Handbook of Pulp and Paper Technologists	Tappi press
J.P. Casey	Pulp & Paper Chemistry and Chemical Technology Vol. I	Wiley Interscience
Rydholm	Pulping Processes	Krieger Pub. Co.
Libbey	Textbook of Pulp and paper Making	
C. Biermann	Handbook of Pulp and Paper Technologists	
R.P. Singh	Bleaching of Pulp	Tappi Press

List of Experiments

1. Preparation of 100 gplNaOH solution for cooking.
2. Calculation of amount of raw material required for pulping in batch digester.
3. Study of Pulping Process parameters in lab digester.
4. Washing and screening of Pulp
5. Preparation of hypochlorite bleach liquor.
6. Calculation of volume of hypochlorite bleach liquor required for given quantity of pulp.
7. Bleaching of Pulp by sodium hypochlorite.
8. Bleaching of Pulp using hydrogen peroxide.
9. Washing of bleached pulp and calculation of Yield percentage.
10. Measurement of bleaching effect by brightness testing.

Title of the course : **Computer Fundamentals**
Subject Code : **CS-111**
 Weekly load : 3
 Credit : 4 (Lecture 3, Practical 1)

LTP 3-0-2

Unit	Course outlines	Lecture
Unit-I	Introduction Definition of electronic Computer, Generations, Characteristic and Application of Computers, Block diagram of computer.	06
	Input/output Devices Various I/O devices like keyboard, mouse etc. Plotter, Scanner, Printer and its types (Inkjet, Dot matrix, Laser printer etc).	04
	Memory Primary and secondary memory, RAM, Types of RAM,ROM & types of ROM, cache, Registers ,Memory Hierarchy.	06
	Basics of Computer Booting process, introduction to concepts-bit, nibble, byte, word, hardware, software, operating system, system software, application software.	06
Unit-II	Computer Languages Generation of Language, Translators, Interpreters, Assemblers, Compilers.	06
	Number System Various codes, decimal, binary, octal, hexadecimal, conversion from one number system to another.	06
	Internet and its Applications Internet, Connecting to the internet, Internet services, Applications like E-commerce, entertainment, education etc Threats: - Firewall, Virus, Worm, Trojan Horses.	06
	Web Technologies World Wide Web, URL, Search engines, Web Browsers, Hypertext , Hypertext Marks Language, Gopher, FTP.	08

Recommended Books:

<i>Author(s)</i>	<i>Title</i>	<i>Publisher</i>
Yadav DS	Foundations of IT	New Age, Delhi
Curtin	Information Technology: Breaking News	TMH
Rajaraman V	Introduction to Computers	Prentice-Hall India

LIST OF PRACTICALS

Perform the following Practicals in MS-Word

1. Create a document using functions: Save as, page number, Bullets and numbering.
2. Create a document using fonts, styles and Formatting options.
3. Create a document using Fill effects, Printed water mark under background option and also use Header and Footer.
4. Create a document, using the function page set up, page preview, and then print that document.
5. Use the concept of Mail Merge in MS Word.
6. Use the concept of Macro in MS Word
7. Create a document using table & perform various operations like Insert, delete, select and Table auto Format in it.

Perform the following Practicals in MS-Excel

8. Create Line, XY, Bar and Pie chart in excel sheet and compare the given data using these charts.
9. Implement all formula like addition, subtraction, Multiplication and division etc. in excel.
10. Use the concept of Macro in MS Excel.
11. Use the concept of Sorting, filter and hyperlink in Excel.
12. Use the concept of paste special and paste as hyperlink in Excel
13. Create a excel sheet using fonts, styles, Formatting options, Text wrap different row, column, and cell width.
14. Create a formulae using function to compare the values of two Rows or Columns.

Perform the following Practicals in MS-PowerPoint

15. Create a Power point presentation using slide designing and use Design Templates, Color schemes, and Animation schemes.
16. Create a Presentation using functions: Save as, page number, Bullets and numbering, pagesetup and take print in layout form.
17. Create a power point presentation using clipart, Word art gallery & then add transition & Animationeffects.
18. Use the concept of Macro in Power Point.
19. Use chart, diagram and table in Power Point.
20. Create a Power point presentation and use View show, Setup show, rehearse timing in presentation.

Perform the following Practicals in MS-Access

21. Create forms in MS-ACCESS.
22. Create reports in MS-ACCESS.
23. Create table and queries in MS-ACCESS using design view.
24. Create Data Access page in design view and by using wizard in MS-ACCESS.

Apply different modification schemes using picture manager.

Organize different types of Data available using clip organizer.

Create Resume using various features of Microsoft Word

Title of the course : **Troubleshooting & Maintenance Lab**
Subject Code : **CS-112**
Weekly load : 4
Credit : 2 (Lecture 0, Practical 2)

LTP 0-0-4

LIST OF PRACTICALS

1. Installation of operating system: Linux & Window
2. Study about Booting process: Cold booting & Warm booting.
3. Study of different antivirus programs.
4. Installation of different antivirus programs:
 - a. Norton antivirus
 - b. Avira antivirus
 - c. AVG antivirus
 - d. McAfee antivirus
5. Purpose and Installation of Microsoft essentials.
6. Troubleshooting of computer components:-
 - a. Mouse
 - b. Keyboard
 - c. Motherboard
 - d. Monitor
 - e. HDD
 - f. FDD
7. Installation and troubleshooting various printing problems of following printers:-
 - a. Inkjet printer
 - b. Dot-matrix printer
 - c. Daisy-wheel printer
 - d. Laser printer
8. Study of diagnostic tools used for PC's.
 - a. Multimeter
 - b. Oscilloscope
 - c. Cable tester
 - d. POST Card
9. Study about various troubleshooting techniques and methods:-
 - a. Functional Area method
 - b. Split-half method
10. Installation and troubleshoot with problems of following modems:-
 - a. Internal modem
 - b. Dial up
 - c. Wi-fi
 - d. External modem
 - e. Cable modem
 - f. DSL modem
11. Installation of following Bar-code Readers:-
 - a. Pen-type
 - b. Laser scanners
 - c. CCD Readers
 - d. Camera-based readers
12. Study of various interactive boards.

Title of the course : **Internet Applications Lab**
Subject Code : **CS-113**
Weekly load : 4
Credit : 2 (Lecture 0, Practical 2)

LTP 0-0-4

LIST OF PRACTICALS

1. Study the different types of search engines.
2. Explore the different methods of internet connectivity.
3. Exercise the different types of TELNET commands.
4. Study the different types of ways to connect Remote Login through Telnet.
5. Describe the stages to create email-id on website and how to send and receive email.
6. Submitting forms online.
7. Explore the features of different types of browsers.
8. Describing the chatting components on the internet.
9. Online shopping on internet.
10. Reading and posting to newsgroups.
11. Study the different types of downloading techniques.
12. Downloading and installing Plug in to view multimedia.
13. Downloading videos on internet.
14. Uploading videos on internet.
15. Downloading pictures from internet.
16. Uploading pictures on internet.
17. Introduction to components of video conferencing.

Title of the course : **Electronic Devices**
Subject Code : **EC-111**
 Weekly load : LTP 2-0-2
 Credit : 3 (Lecture 2, Tutorial 0 , Practical 1)

Unit	Course outlines	Lecture(s)
Unit-I	Introduction Classification of materials into conducting and insulating materials through a brief reference to atomic structure, Conducting Materials, Insulating Materials, Semi-conductor Materials	8
	Active and Passive Components Introduction to active and passive components; fixed and variable resistances, their various types fixed and variable capacitors, their various types and important specifications and colour codes. Voltage and current sources – concept of constant voltages and constant current sources, symbol and graphical representation, characteristics of ideal and practical sources.	8
Unit-II	Semiconductor Diodes Atomic structure of Germanium and Silicon semi-conductors; intrinsic and extrinsic semiconductors, PN junction, basic principles of operation and VI characteristics of PN junction diode, static and dynamic resistance of a diode. Use of a diode in rectifiers, half wave, full wave and bridge rectifier with shunt capacitor filter, series inductor filter, zener diode and its applications, as a voltage regulator, light emitting diode (LED), liquid crystal display (LCD).	8
	Transistors Introduction to a transistor, working of a PNP and NPN transistor, input and output characteristics, transistor configurations, biasing of a transistor, amplifying action of a transistor, comparison of different configurations, common emitter amplifier circuit, load line, concept, field effect transistor FET, JFET, MOSFET, their characteristics and applications, unijunction transistor (UJT).	8

Recommended Books:

Author	Title	Publisher
VK Mehta	Basic Electronics	S. Chand
Grover, Jamwal	Electronic Components and Materials	Dhanpat Rai
SM Dhir	Electronic Components & Materials	McGraw Hill
Bhargava & Gupta	Electronic Devices & Linear Circuits	McGraw Hill

List of Experiments

1. To measure values of different resistors by using the colour coding chart
2. To observe the VI characteristics of semiconductor diode in forward bias
3. To observe the VI characteristics of zener diode in reverse bias
4. To calculate the resistances by using multimeter
5. To observe the front panel of CRO
6. To observe the front panel of signal generator
7. To observe the front panel of function generator
8. To verify the npn and pnp transistors
9. To construct half-wave rectifier, wave shape of the electrical signal and calculate its ripple factor
10. To construct full-wave rectifier, wave shape of the electrical signal and calculate its ripple factor

Title of the course : Fundamentals of Electrical Engineering
Subject Code : EE-111
Weekly load : 5
Credit : 4(Lecture 3, Practical 1) **LTP-3 0 2**

Unit	Course Outlines	Lecture
Unit-I	Basic Concepts Electric Charge, Current and Electromotive force, Potential and Potential Difference; conductor, semiconductor insulator and dielectric; Electrical Power and Energy; Ohm's Law, Resistance, and color coding; Capacitance and Inductance, their ratings; Effects of Temperature on Resistance, Series and Parallel Connection of Resistances and capacitances, Kirchoff's Laws and Their Applications	06
	AC Fundamentals Concept of Alternating Voltage and Alternating Current, Difference between AC and DC, Various Terms Related with AC Waves; RMS and Average Values, Concept of Phase and Phase Difference, Single Phase and Three Phase Supply; 3-ph Star-Delta connections, Inter-Relation between phase voltage/current & line voltage/current; Alternating Voltage applied to Pure Resistance, Pure Inductance, Pure Capacitance and their combinations, Concept of Power and Power Factor in AC Circuit.	08
	Measuring Instruments Principle and Construction of Instruments used for Measuring Current, Voltage, Power and Energy, Methods and precautions in use of these and other instruments e.g. digital multimeters, oscilloscopes, signal generators etc.	03
	Electrical Safety Electrical Shock and Precautions against it, Treatment of Electric Shock; Concept of Fuses and Their Classification, Selection and Application; Concept of Earthing and Various Types of Earthing, MCBs, ELCBs and their Application.	04
Unit-II	Electromagnetic Induction Concept of Magnetic Field, Magnetic Flux, Reluctance, Magneto Motive Force (MMF), Permeability; Self and Mutual Induction, Basic Electromagnetic laws, Effects on a Conductor Moving in A Magnetic Field, various losses in magnetic circuits;	04
	Electrical Machines & Transformers Elementary concepts of an electrical machine, Basic principle of a motor and a generator, Torque due to interaction of two magnetic fields and the concept of torque angle, Common features of rotating electrical machines, Classification of Electrical machines; Principles, Construction and Working of various machines; Starters: Need, Construction and Operation, Need of a transformer, classification, Principles, Construction and Working of a Transformer, Applications of Transformers;	10
	Utilization of Electricity Utilization concepts of Electricity for electrolysis process e.g., Electroplating & Electro refining, Electrometallurgy & electrotyping etc., Electrochemical Cells & Batteries; Application of Electricity for Heating, Ventilating and air-conditioning, Melting & other Metallurgical processes, Welding and illumination.	04
	Basic Troubleshooting Basic Testing and faults diagnosis in electrical systems, various tools and their applications, replacement of different passive components e.g. fuses, lamps and lamp holders, switches, cables, cable connectors, electromagnetic relays.	04

Recommended Books-

Title	Author	Pulisher
Electrical Technology	Edward Hugh	Pearson Education
Basic Electrical Engineering	D P Kothari & I J Nagrath	TMH
Electrical Machines	D P Kothari & I J Nagrath	TMH
Electrical Machines	S K Bhattacharya	TMH

Practicals

- Study of various passive components and measuring instruments and their connections in electrical circuits.
- Verification of Ohm's Law.
- Verification of Kirchoff's laws (KCL & KVL).
- Verification of equivalent resistances in series and parallel connections.
- Measurement of various characteristic values of a Sinusoidal waveform with the help of CRO.
- Measurement of voltage, current and power in RL and RLC circuits and Verification of phase angle and power factor concept.
- Study of various types of earthings.
- Study of various types of protection devices e.g. fuses, MCBs and ELCBs
- Verification of Faraday's laws and Lenz's law.
- Study of various types of DC motors and their starters.
- Study of various types of AC motors and their starters.
- Study of various types of transformers and Verification of turns ratio.
- Starting and reversing various AC and DC motors.
- Fault diagnosis and removal in general electrical connection /apparatus.

Title of the course : **Electrical Workshop Practice-I**
Subject Code : **EE-112**
Weekly load : **4** **LTP-0 0 4**
Credit : **2(Lecture 0, Practical 2)**

List of Practical:

Ex. No.	List of study and practical exercises.	Lecture
1	Introduction with Electrical Symbols.	2
2	Familiarization with tools used in Electrical works	2
3	Introduction with Electrical Materials.	2
4	Introduction with Abbreviations Commonly used in Electrical Engineering.	2
5	Introduction of Electrical safety precaution.	2
6	To make 'Straight' joint on 1/18 PVC wire.	4
7	To make 'T' joint on 1/18 PVC wire.	4
8	To make 'Britannia' joint on GI wire.	4
9	To study fluorescent tube light.	4
10	To study Sodium lamp.	4
11	To study high pressure mercury vapour lamp. (H. P. M. V).	4
12	To wire up a circuit with two lamp controlled by two switch.	4
13	To wire up a circuit with one lamp controlled by one switch	4
14	To wire a circuit used for staircase wiring.	4
15	To study Godown wiring.	4

Recommended Books

1. H Partab, *Electrical Gadgets*,
2. D K Sharma, *Basic Electrical & Electronics Engineering*, CBS publisher
3. Singh R P, *Electrical Workshop: A text Book*, I K International Publisher House Pvt. Ltd

Title of the course	:	Basic Electrical Engineering	
Subject Code	:	EE-113	
Weekly load	:	5	LTP-3 0 2
Credit	:	4(Lecture 3, Practical 1)	

Unit	Course Outlines	Lecture(s)
Unit-I	Basic Concepts Electric Charge, Current and Electromotive force, Potential and Potential Difference; conductor, semiconductor insulator and dielectric; Electrical Power and Energy; Ohm's Law, Resistance, and color coding; Capacitance and Inductance, their ratings; Effects of Temperature on Resistance, Series and Parallel Connection of Resistances and capacitances, Kirchoff's Laws and Their Applications	06
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	Measuring Instruments Principle and Construction of Instruments used for Measuring Current, Voltage, Power and Energy, Methods and precautions in use of these and other instruments e.g. digital multimeters, oscilloscopes, signal generators etc.	03
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	Utilization of Electricity Utilization concepts of Electricity for electrolysis process e.g., Electroplating & Electro refining, Electrometallurgy & electrotyping etc., Electrochemical Cells & Batteries; Application of Electricity for Heating, Ventilating and air-conditioning, Melting & other Metallurgical processes, Welding and illumination.	04
	Basic Troubleshooting Basic Testing and faults diagnosis in electrical systems, various tools and their applications, replacement of different passive components e.g. fuses, lamps and lamp holders, switches, cables, cable connectors, electromagnetic relays.	04

List of Practicals:

- Study of various passive components and measuring instruments and their connections in electrical circuits.
- Verification of Ohm's Law.
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- Measurement of various characteristic values of a Sinusoidal waveform with the help of CRO.
- Measurement of voltage, current and power in RL and RLC circuits and Verification of phase angle and power factor concept.
- Study of various types of earthings.
- Study of various types of protection devices e.g. fuses, MCBs and ELCBs
- Verification of Faraday's laws and Lenz's law.
- Study of various types of DC motors and their starters.
- Study of various types of AC motors and their starters.
- Study of various types of transformers and Verification of turns ratio.
- Starting and reversing various AC and DC motors.
- Fault diagnosis and removal in general electrical connection /apparatus.

Recommended Books-

Title	Author	Pulisher
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Electrical Machines	S K Bhattacharya	TMH

Title of the course : Introduction to Food Technology
Subject Code : FT-111 LTP 3-0-2
Credit : 4 (Lecture 3; Practical 1)

Unit	Detailed contents	Lectures
Unit-I	Introduction Definition, function and characteristics of foods; Nutrients and their functions; composition of common foods; present status of food industry in India	3
	Microbiology Microorganisms associated with foods, their classification, characteristics and their relevant properties	8
	Food chemistry Chemical composition of various foods; classification and properties of major food constituents; a brief review of post harvest and anti-mortem changes in foods and their relevance	8
	Food processing technology (An-overview) An overview of technology of processing of cereals, pulses, oilseeds, fruit, vegetables, milk and milk products, egg and poultry products, fish and fish products, meat and meat products; food laws and standards; sensory evaluation of foods.	9
Unit-II	Introduction to food processing and preservation Food spoilage agents; principles of food processing and preservation; effect of processing on the shelf life and food composition	5
	Chemical preservatives Importance of food additives; mechanism of action of class-I and class-II preservatives; factors affecting the choice of preservatives and their uses.	6
	Food Packaging Definition of packaging; functions of packaging materials; types of packaging materials e.g. paper, glass, metal, plastics; packaging forms	4

Recommended books:

Author	Title	Publishers
Potter	Food science	CBS
W.C. Frazier.	Food microbiology	TMH
Fennema, Kerrel	Principles of food preservation	Marcel Dekkar

List of practicals:

1. Preparation and verification of normality of standard solution
2. Determination of water content by hot air oven and IR moisture meter and comparison of results
3. Determination of nutritive values of different food
4. Determination of total soluble solid of different liquid foods
5. Determination of acidity of food products
6. Determination of pH of different liquid foods.
7. Determination of ash contents of food
8. Determination of fat content by Soxhlet method
9. Determination of salt content in milk sample
10. Study of compound microscope
11. Determination of microbial load of food products
12. Determination of external quality of egg
13. Determination of internal quality of egg by candling
14. Determination of meat quality

Title of the course	:	Instrumentation Workshop Practice	
Subject Code	:	IE-111	
Weekly load	:	2	LTP-0 0 2
Credit	:	1(Lecture 0, Practical 1)	

List of Practicals:

1. Use of Various hand tools for manufacturing and testing e.g. pliers, cutter, crimpers, stripper, screw driver etc.
2. Familiarization , use and practice of measuring instruments for testing and measurement e.g. Analog and Digital Multimeters, CRO, frequency meter, signal generators, signal sources, LCR meter and IC tester.
3. Use of various chemicals used in instrumentation workshop and safety precautions to be observed.
4. Demonstration of various steps of PCB fabrication techniques:
 - (i) Identification of PCB board materials, their characteristics, corrosion and its prevention
 - (ii) Photo processing including photo print, etching, buffing, printing, high speed drilling, surface treatment, plated through holes, double sided PCBs.
 - (iii) Assembly of circuits on PCB, soldering and de-soldering techniques, wire shaping, edge connectors.

Recommended Books-

1. Modern Electronic Equipment by RS Khandpur, Tata McGraw Hill
2. Maintenance of Electronic Equipment by KS Jamwal, DhanpatRai and Sons

Title of course : **ENGINEERING DRAWING**
Subject Code : **ME-111**
Weekly load : 04
Credit :02(Lecture 0, Practical 2)

LTP 0-0-4

Unit	Course Description	Lecture
Unit-I	Introduction Introduction, Objectives, applications. Fundamentals of engineering drawing, Use and handling of different drawing instruments, title block, sheet sizes, first and third angle projections, orthographic projections.	06
	Lettering and Dimensioning Free hand sketching of different types of lines in engineering drawing as per IS specifications, Free hand lettering (alphabet and numerals) - lower case and upper case, vertical and inclined at 75° in the ratio of 7:4, Notation of dimensioning, size and location dimensions, aligned and unidirectional systems of dimensioning, general rules for dimensioning, unit of dimensioning.	08
	Scales Uses of scales, sizes of scale, representative fraction, construction of plain and diagonal scales	08
	Projection of points, line Introduction on theory of projections and orthographic projections, projection of a point in different quadrants, projection of straight lines in different positions (all possible cases)	10
Unit-II	Projection of Planes Definition of plane, types of planes, traces of plane, projection of planes in different positions	10
	Projection of Solids Types of solids, projections of solids in simple positions, introduction on sectioning of solids	10
	Development of surfaces Introduction, Development of a right prism, cylinder, pentagonal prism, and a right pyramid	12

Recommended Books

Title	Author(s)	Publisher
Engineering Drawing	P S Gill	Kataria and Sons, New Delhi
Engineering Drawing	R.K.Dhawan	S. Chand & Co, New Delhi
Engineering Drawing	N.D, Bhatt	Charotar Publishing House

Title of the course : **Workshop Practice-1**
Subject Code : **WS-111**
Weekly load : 4
Credit : 2 (Lecture 0, Practical 2)

LTP 0-0-4

Practical: 10-14 jobs from the following list

CARPENTRY SHOP

1. Safety precautions in carpentry shop.
2. Introduction to wood and wood working operations.
3. Demonstration and use of carpentry shop tools and equipment.
4. Exercise on simple operations, viz. hand sawing, marking, planning and chiseling.
5. Cross lap joint, T-lap joint, Corner lap joint, Mortise and tenon joint, Dovetail joint

FITTING SHOP

1. Safety precautions in fitting shop.
2. Demonstration and use of fitting shop tools and equipment.
3. Study and use of instruments in fitting shop, like, vernier calipers, micrometer, height gauge and bevel protractor
4. Exercise on simple operation viz. cutting, chipping, sawing, filing, drilling

FORGING SHOP

1. Safety precautions in carpentry shop.
2. Familiarization with different tools used in forging.
3. Exercise on conversion of round to square with cold forging.
4. Exercise on conversion of round to square with hot forging.
5. Upsetting operation exercise.

FOUNDRY SHOP

1. Safety precautions in foundry shop.
2. Familiarization with different patterns and hand tools.
3. Preparations of green sand mould using single piece pattern three-four exercises.
4. Preparations of green sand mould using split pattern on bench moulding.
5. Preparations of green sand mould using solid pattern by bedded method.

SHEET METAL SHOP

1. Safety precautions in sheet metal shop.
2. Familiarization with different tools and processes in sheet metal shop.
3. Exercise on sheet cutting, development, folding, bending, piercing, punching, parting, notching and slitting.
4. Profile and circle cutting exercise.
5. Different types of joints exercise

ARC WELDING SHOP

1. To familiarize with safety aspects.
2. To familiarize with equipment and tools of the welding shop.
3. To learn about different positions of welding.
4. To practice of bead on plate in flat position
5. To practice making of a butt joint and lap joint on a flat piece

Title of the course : **Workshop Practice**
Subject Code : **WS-112**
Weekly load : 4
Credit : 2 (Lecture 0, Practical 2)

LTP 0-0-4

Practical: 10-14 jobs from the following list

CARPENTRY SHOP

6. Safety precautions in carpentry shop.
7. Introduction to wood and wood working operations.
8. Demonstration and use of carpentry shop tools and equipment.
9. Exercise on simple operations, viz. hand sawing, marking, planning and chiseling.
10. Cross lap joint, T-lap joint, Corner lap joint, Mortise and tenon joint, Dovetail joint

FITTING SHOP

5. Safety precautions in fitting shop.
6. Demonstration and use of fitting shop tools and equipment.
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