

MAULANA AZAD NATIONAL URDU UNIVERSITY

(A Central University established by an Act of Parliament in 1998)

Accredited 'A' Grade by NAAC

Gachibowli, Hyderabad - 500 032, T.S.

Polytechnic Syllabus 2018 (CBCS Pattern)

Diploma in

Electronics & Communication Engineering

MANUU POLYTECHNIC
DIPLOMA IN
(ELECTRONICS AND COMMUNICATION ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION

Semester I									
Sno.	Course Code	Course Name	L	T	P	Credits	Internal Marks	External Marks	Total Marks
1	DPCC101HST	English-I	2	-	-	2	15	35	50
2	DPCC103BST	Engineering Mathematics – I	3	-	-	3	30	70	100
3	DPCC101BST	Engineering Physics-I	3	-	-	3	30	70	100
4	DPCC101BSP	Engineering Physics Lab-I	-	1	2	2	25	25	50
5	DPCC102BST	Engineering Chemistry	3	-	-	3	30	70	100
6	DPCC102BSP	Engineering Chemistry Lab	-	1	2	2	25	25	50
7	DPEL101EST	Basic Electrical Engineering	3	-	-	3	30	70	100
8	DPEL101ESP	Basic Electrical Engineering Lab	-	1	2	2	25	25	50
9	DPCS101PCT	Computer Fundamentals	3	-	-	3	30	70	100
10	DPCS101PCP	Computer Fundamentals Lab	-	1	2	2	25	25	50
11	DPCE101ESP	Engineering Graphics Lab-I	1	-	2	2	25	25	50
Total Credits (Semester I)			35			27	290	510	800

MANUU POLYTECHNIC
DIPLOMA IN
(ELECTRONICS AND COMMUNICATION ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION

Semester II									
Sno.	Course Code	Course Name	L	T	P	Credits	Internal Marks	External Marks	Total Marks
1	DPCC201HST	English-II	2	-	-	2	15	35	50
2	DPCC203BST	Engineering Mathematics – II	3	-	-	3	30	70	100
3	DPCC201BST	Engineering Physics-II	3	-	-	3	30	70	100
4	DPCC201BSP	Engineering Physics Lab-II	-	1	2	2	25	25	50
5	DPCC202BST	Engineering Chemistry & Environmental Science	3	-	-	3	30	70	100
6	DPCC202BSP	Engineering Chemistry & Environmental Science Lab	-	1	2	2	25	25	50
7	DPEL201PCT	Basic Electronics	3	-	-	3	30	70	100
8	DPEL201PCP	Basic Electronics Lab	-	1	2	2	25	25	50
9	DPCS201PCT	Programming in C	3	-	-	3	30	70	100
10	DPCS201PCP	Programming in C Lab	-	1	2	2	25	25	50
11	DPCE201ESP	Engineering Graphics Lab-II	1	-	2	2	25	25	50
Total Credits (Semester II)			35			27	290	510	800

MANUU POLYTECHNIC
DIPLOMA IN
(ELECTRONICS AND COMMUNICATION ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION

Semester III									
Sno.	Course Code	Course Name	L	T	P	Credits	Internal Marks	External Marks	Total Marks
1	DPCC301BST	Engineering Mathematics – III	3	-	-	3	30	70	100
2	DPEL301PCT	Analog Electronics	3	-	-	3	30	70	100
3	DPEL301PCP	Analog Electronics lab	-	1	2	2	25	25	50
4	DPEL302PCT	Digital Electronics	3	-	-	3	30	70	100
5	DPEL302PCP	Digital Electronics Lab	-	1	2	2	25	25	50
6	DPEL303PCT	Communication Systems I	3	-	-	3	30	70	100
7	DPEL303PCT	Communication Systems I Lab	-	1	2	2	25	25	50
8	DPEL303PCT	Network Theory	3	-	-	3	30	70	100
9	DPEL303PCP	Network Theory lab	-	1	2	2	25	25	50
10	DPCE301SEP	Basic Communication & Presentation Skills Lab	-	1	2	2	25	25	50
Total Credits (Semester III)			30			25	275	475	750

MANUU POLYTECHNIC
DIPLOMA IN
(ELECTRONICS AND COMMUNICATION ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION

Semester IV									
Sno.	Course Code	Course Name	L	T	P	Credits	Internal Marks	External Marks	Total Marks
1	DPEL401PCT	Linear Integrated Circuits	3	-	-	3	30	70	100
2	DPEL401PCP	Linear Integrated Circuits Lab	-	1	2	2	25	25	50
3	DPEL402PCT	Communication Systems II	3	-	-	3	30	70	100
4	DPEL402PCP	Communication Systems II Lab	-	1	2	2	25	25	50
5	DPEL403PCT	Microprocessor	3	-	-	3	30	70	100
6	DPEL403PCP	Microprocessor Lab	-	1	2	2	25	25	50
7	DPEL404PCT	Industrial Electronics	3	-	-	3	30	70	100
8	DPEL404PCP	Industrial Electronics Lab	-	1	2	2	25	25	50
9	DPEL405PCT	Electronic Measuring Instruments	3	-	-	3	30	70	100
10	DPCC401SEP	Communication and Interactive Skills Lab	-	1	2	2	25	25	50
Total Credits (Semester IV)			30			25	275	475	750

MANUU POLYTECHNIC
DIPLOMA IN
(ELECTRONICS AND COMMUNICATION ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION

Semester V									
Sno.	Course Code	Course Name	L	T	P	Credits	Internal Marks	External Marks	Total Marks
1	DPCC501PET	Industrial Management and Entrepreneurship	3	-	-	3	30	70	100
2	DPEL501PCT	Microcontrollers	3	-	-	3	30	70	100
3	DPEL501PCP	Microcontrollers lab	-	1	2	2	25	25	50
4	DPEL502PCT	Advanced Communication System	3	-	-	3	30	70	100
5	DPEL502PCP	HDL Lab	-	1	2	2	25	25	50
6	DPIT501SET	Internet of Things	3	-	-	3	30	70	100
7	DPIT501SEP	Internet of Things Lab	-	1	2	2	25	25	50
8	DPIT502PCP	Hardware Devices and Networking Lab	-	1	2	2	25	25	50
9	DPCC501SEP	Employability Skills lab	-	1	2	2	25	25	50
	Electives								
10	DPEL501PET	1. Data Communication and Computer Networks	3	-	-	3	30	70	100
	DPEL502PET	2 VLSI Technology							
	DPEL503PET	3. Biomedical instrumentation							
Total Credits (Semester V)			30		25	275	475	750	

**MANUU POLYTECHNIC
DIPLOMA IN
(ELECTRONICS AND COMMUNICATION ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION**

Semester VI									
Sno.	Course Code	Course Name	L	T	P	Credits	Internal Marks	External Marks	Total Marks
1	DPEL601PCP	Industrial Skills Training-Project Work	-	6*	-	11	300	300	600
Total Credits (Semester VI)						11	300	300	600

*** 6 Hours of Training load per Teacher –Trainee batch per week**

Total Credits : 140

Total Marks: 4450

Course Code	Course Title	Semester
DPCC101HST	ENGLISH-I	1

Scheme of Instruction

Total Duration : 30 Hrs

Periods / Week: 2-L/T

Credits: 2

Instruction Mode: Lecture + Tutorial

Course Objectives:**The course enables the students to:**

- Understand the need to learn English
- Listen for general comprehension
- Read and comprehend English
- Learn various grammatical structures
- Learn to excel in various forms of written communication

Course Outcomes:**At the end of the course the students are able to:**

- Use classroom expressions meaningfully
- Listen and understand general specific information
- Identify main ideas, specific ideas by reading.
- Use basic sentence structures in spoken and written forms
- Generate ideas for writing a paragraph

Scheme of Examination

Maximum Score : 50

Internal Evaluation : 15

End/ External Evaluation : 35

Exam Duration : 2 Hours

Unit	Course Content	Instruction Hours
I	Listening & Speaking : Need for English, Expressing Feelings, Making requests, Expressing Obligations.	10
II	Reading: Adventures of Toto, Tiller turns Engineer- An Innovation.	10
III	Grammar and Writing: Describing words, Tenses, Basic Sentence Structures, Voice, Questioning, Paragraph writing, letter writing.	10
Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.		
Text Books and References:		
1	Essential English Grammar (Intermediate level)- Raymond Murphy	
2	Learn English (A Fun Book of Functional Language, Grammar and Vocabulary)- Santanu Sinha Chaudhuri	
3	Grammar builder (Entire Series)- Oxford University Press	
4	Word Power made Easy- Norman Lewis	

Course Code	Course Title	Semester
DPC103BST	ENGINEERING MATHEMATICS-I	1

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 3 L

Credits: 3

Instruction Mode: Theory

Course Objectives:

- To introduce the concept of sequences and series.
- To introduce matrices and illustrate application of matrices for solving linear equations.
- To introduce the basic concepts of trigonometry and trigonometric ratios

Course Outcomes:

the course, the student will be able to

- Solve simple problems on sequences and series.
- Solve the linear simultaneous equations in three variables using matrix methods.
- Solve problems from trigonometric ratios and appreciate applications of trigonometry.

Scheme of Examination

Maximum Score : 100

Internal Evaluation : 30

End/ External Evaluation:70

Exam Duration : 3 Hours

Unit	Course Content	Instruction Hours
I	<p>SEQUENCE AND SERIES :- Arithmetic Mean, Arithmetic Progression (A.P.), Geometric Progression (G.P), Hyperbolic Progression (H.P), Sum of infinite G.P. Recurring decimals as infinite G.P problems on A.P., G.P. and H.P.</p> <p>PARTIAL FRACTION: Introduction Rational Fraction and Some Fundamental Rules To Resolve a Proper Fraction $f(x)/g(x)$ into Partial Fraction.</p> <p>BINOMIAL THEOREM: - Binomial Theorem Statement (without proof) Properties of Binomial Theorem and its Applications.</p> <p>FUNCTIONS AND RELATIONS –: Types of Functions, Inverse Functions, Domain, Range, and Inverse of real valued function.</p>	15
II	<p>MATRICES Types of Matrices, Additions & Subtraction of matrices, Multiplication of matrices, example and problem. Rank of a matrix, Determinant and Adjoint of a matrix, Inverse of a matrix and related problems. Linear equation of a 3 variables, solution by Cramer's rule.</p>	15

III	TRIGONOMETRY Trigonometrical ratios of the sum and difference of two angles. Trigonometrical ratios of multiple and submultiples. Trigonometrical equations. Transformation of products and sums.	15
Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.		
Text Books and References:		
1	Text book of Engineering Mathematics-I by G.Srinagesh, and others –FALCON Publishers	
2	Text book of Engineering Mathematics –I by Radiant Publishers	
3	Text book of intermediate Mathematics – I & II by Telugu Academy.	
4	Text book of Engineering Mathematics-I by Dr.J.Sairam and others – UNITECH SERIES.	

Course Code	Course Title	Semester
DPCC101BST	ENGINEERING PHYSICS-I	1

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 3 L

Credits: 3

Instruction Mode: Theory

Scheme of Examination

Maximum Score : 100

Internal Evaluation : 30

End/ External Evaluation:70

Exam Duration : 3 Hours

Course Objectives:

The objective of the course is to develop basic understanding of the concepts of physics among students, which are fundamental to many advance courses which students will learn as part of their technical training.

Course Outcomes:

- Understand the importance of Units, Dimensions and Vectors
 - Acquire Basic ideas of Kinematics and Dynamics.
 - Understand the elastic property and the types of modules of elasticity.
 - Explain the surface tension of liquids and viscosity of fluids.
- Gain knowledge about heat and thermodynamics

Unit	Course Content	Instruction Hours
I	<p>Units and Dimensions Physics – scope and nature– physics in relation to technology, Define the terms (a) Physical quantity (b) Fundamental physical quantity (c) Derived physical quantities with examples, Define units, Fundamental units, Derived Unites. State S.I. Units of various physical quantities with symbols, Rules for writing SI units. Dimensions of physical quantity, dimensional formulae and Dimensional Equations, Statement of principle of Homogeneity of Dimensions, State the applications of Dimensional Analysis, problems solving.</p> <p>Elements of vectors Explain the concept of vectors Define scalar and vector quantities with examples, Representation of vectors, classification of vectors,(Unit vectors, Null Vectors, Equal Vectors, Negative vectors, Like vectors, Position vectors) Determine the resolution of vectors by component method ,State triangle law of addition of vectors, State parallelogram law of addition of vectors, Derive an expression for magnitude and direction of resultant of two vectors using parallelogram law, State and explain polygon law of addition of vectors, Define dot product and cross product of two vectors with examples and mention their properties and the related numerical problems solving.</p>	15
II	<p>Kinematics Introduction, Write the equation of motion in a straight line, Explain the</p>	15

	<p>acceleration due to gravity on the surface of the Earth, Derive expressions for vertical motion, (a) Maximum Height (b) Time of Ascent (c) Time of Descent (d) Time of flight, Derive an expression for height of a tower when a body projected vertically upwards from the top of a tower, Explain projectile motion with examples, Explain horizontal projection and Derive expression for the path of a projectile for horizontal projection, Explain oblique projection, derive an expression for the path of an oblique projectile,</p> <p>Dynamics Define the terms work, power, energy and State their SI units, Define potential Energy and Kinetic Energy give examples and derive their expression. State and explain the law of conservation of Energy, verify in the case of freely falling body. Define simple harmonic motion and give examples, State the conditions of S.H.M, Define simple pendulum and second's pendulum, derive an expression for time period of simple pendulum.</p> <p>Properties of matter: Define Surface Tension and states examples, Define Angle of contact Define Capillarity and states examples, Experimental determination of surface tension based on capillarity tube method. Explain the concept of viscosity and state the Examples. Problem solving</p>	
III	<p>Heat: Introduction, Introduction to a Thermal expansion of solid (Linear, areal, cubical expansions and their coefficients definition and formula), Explain three modes of transmission of heat, Conduction, Convection and Radiation, Explain absolute scale of temperature. Write relation between Celsius, Fahrenheit and Kelvin scales, State Boyle's law and Charles laws, Derive ideal gas equation and Define gas constant and Universal gas constant, Calculate external work done by a gas, Explain Isothermal process and Adiabatic process, Problem solving</p> <p>Thermodynamics: Introduction, Heat and Temperature, Internal Energy, State laws of thermodynamics, Define specific heats, molar specific heats of a gas, Work done by ideal gas during expansion and derive relation $C_p - C_v = R$ & Problem solving</p>	15
Examination and Evaluation Pattern:		
As per the CBCS Rules and Regulations of Examination Branch of MANUU.		
Each Unit will carry equal weightage of marks.		
Text Books and References:		
1	Concepts of Physics by HC VERMA, Surya Publication. Ghaziabad, India	
2	Physics – Resnick and Halliday – Wisley Toppan publishers – England	
3	Physics – Intermediate –I– Telugu Academy, Telangana, India	
4	Intermediate physics – Volume I & II Engineering Physics by SB SING	

Course Code	Course Title	Semester
DPCC101BSP	ENGINEERING PHYSICS LAB-I	1

Scheme of Instruction

Total Duration : 30Hrs
 Periods / Week: 1+2-T+P
 Credits: 2
 Instruction Mode: Tutorial + Practical

Scheme of Examination

Maximum Score : 50
 Internal Evaluation : 25
 End/ External Evaluation : 25
 Exam Duration : 3 Hours

Course Objectives:

On completion of the practical of the subject the student should be able to develop the following skills:

- Handling the apparatus with precautions
- Develop skill of observing and taking reading
- Improve analytical skills by calculation.
- Improve his systematic approach and research attitude .

Course Outcomes:

- Provide familiarity with apparatus and enable them to handle the instruments and apparatus with purpose.
- Demonstrate the principles covered in your study material in physics.
- Learn how to do science experiments.
- Develop an attitude of perfection in practical tasks.

Cycle	Course Content	Instruction Hours
I	1. Determine the volume of sphere, using Vernier calipers 2. Determine the volume of, cylinder using Vernier calipers 3. Determine the radius of wire using Screw gauge 4. Determine the thickness of glass plate using Screw gauge 5. Verify Parallelogram law of forces 6. Verify Triangle law of forces	15
II	1. Determine the acceleration due to gravity at place using Simple pendulum 2. Draw the graph of length of pendulum against square of the time period. Use the graph to find the length of the second's pendulum. 3. Verify Boyle's law using Quill tube 4. Determine the Surface tension of water by capillary rise method 5. Determine the Viscosity of water using aspirator bottle.	15

Examination and Evaluation Pattern:

As per the CBCS Rules and Regulations of Examination Branch of MANUU.

Each Unit will carry equal weightage of marks.

Text Books and References:

1	Concepts of Physics by HC VERMA, Surya Publication. Ghaziabad, India
2	Physics – Resnick and Halliday – Wisley Toppan publishers – England
3	Physics – Intermediate –I– Telugu Academy, Telangana, India
4	Intermediate physics – Volume I & II Engineering Physics by SB SING
5.	MANUU Laboratory Manual in Engineering Physics

Course Code	Course Title	Semester
DPCC102BST	ENGINEERING CHEMISTRY	I

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 3 L

Credits: 3

Instruction Mode: Theory

Scheme of Examination

Maximum Score : 100

Internal Evaluation : 30

End/ External Evaluation:70

Exam Duration : 3 Hours

Course Objectives:

The objective of this course is to make the students understand and master basic concepts in Chemistry. The syllabus provides logical sequencing of the 'Units' of the subject matter with proper placement of concepts for better understanding with ultimate goal of providing firm foundation for further learning of Chemistry at tertiary level more effectively. We expect that at the end of Semester-I the student will

- Understand the importance of basic chemistry and its applications in daily life.
- Acquire Basic ideas of Atomic structure, Modern Periodic Table and Chemical bonding.
- Understand the organic chemistry and its applications in Engineering.
- Explain Solutions, Acid and Bases.
- Gain knowledge about Electrochemistry, Corrosion, metallurgy and its applications.

Course Outcomes:

- The student should be able to describe several fundamental concepts of chemistry and its applications in various aspects of life.
- The student should be able to understand and apply various theories of Acid and Bases in different chemical reactions.
- The student should be able to prepare for further learning of chemistry at tertiary level and prepare for competitive examinations like ECET etc.

Unit	Course Content	Instruction Hours
I	<p>SOME BASIC CONCEPTS OF CHEMISTRY:</p> <p>A- General Introduction: Importance and Scope of Chemistry.</p> <p>B- Atomic structure;-Fundamental particles of an atom-Bohr's atomic theory and its limitations-Quantum numbers.</p> <p>C- Principles of Electronic configuration;-1.Aufbau's principle, Hand's rule and Pauli's exclusion principle with examples. Electronic configuration of elements (1 to 30).Orbital and the shapes of s, p and d Orbitals.</p> <p>D- Modern Periodic Table and Periodic Law.</p>	15

	<p>E- Chemical bonding:- Ionic, Covalent, Coordinate covalent bond with examples.</p> <p>F- Organic Chemistry- General Introduction and Classification of Organic Compounds.</p> <p>G- Hydrocarbons: Classification of Hydrocarbons, Homologues series. a) Alkanes – Ethane b) Alkenes – Ethene c) Alkynes – Ethyne and Benzene.</p> <p>H- Types of Functional groups with examples.- Isomerism; Structural Isomers.</p> <p>I- Types of Organic reactions: a) Addition Reactions b) Substitution Reactions.</p>	
II	<p>SOLUTIONS AND ACIDS AND BASES</p> <p>A- Solutions-</p> <ol style="list-style-type: none"> 1. General Introduction of solutions: Classification of Solutions-Aqueous and non- aqueous solution. <p>B- Concentration terms Molarity, Normality and problems. Parts per million, Components of solution, Types of solution on the basis of physical state of solute and solvent. Boiling point, Melting point and Freezing point.</p> <p>C- Acid and Bases:</p> <ol style="list-style-type: none"> 1. General Introduction of Acids and Bases 2. Theories of acids and bases and limitations. 3. Arrhenius concept , Bronsted-Lowry concept & Lewis Theory. 4. Ionic product of water (K_w). pH and related numerical problems. 5. Buffer solutions. 	15
III	<p>ELECTROCHEMISTRY AND CORROSION</p> <p>A- ELECTROCHEMISTRY</p> <ol style="list-style-type: none"> 1. Introduction of Electrochemistry. 2. Conductors and insulators, Electrolytes and non-electrolytes. 3. Arrhenius theory of electrolytic dissociation. 4. Electrolytic cells &Electrolysis: Electrolysis of fused NaCl Industrial Electrolytic process-Chloralkali process (aqueous NaCl). 5. Faraday's laws of electrolysis and numerical problems. 6. Construction of Galvanic cell, standard electrode potential, electrochemical series. emf of the cell & numerical problems. 7. Electrochemical energy storage: Batteries-Primary and 	15

	<p>Secondary batteries, lead acid storage battery Fuel cells: Definition, Hydrogen-oxygen fuel cell.</p> <p>B- Corrosion:</p> <ol style="list-style-type: none"> 1. General Introduction of Corrosion: Definition, Factors affecting corrosion. 2. Electrochemical theory of corrosion. 3. Types of cells-stress cells, concentration cells and composition cells. 4. Electrochemical corrosion of iron & mechanism of rusting of iron. 5. Control of corrosion: Cathodic protection-sacrificial anode & impressed current (voltage) method, coating methods. 	
<p>Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.</p>		
<p>Text Books and References:</p>		
1	Intermediate chemistry Vol 1&2 Telugu Acedemy	
2	Intermediate Chemistry NCERT for Class XI and XII.	
3	Organic Chemistry R. T. Morrison and R. N. Boyd	
4	Engineering Chemistry Jain & Jain	
5	Engineering Chemistry O.P. Agarwal, Hi-Tech.	
6	Engineering Chemistry Sharma	

Course Code	Course Title	Semester
DPCC102BSP	Engineering Chemistry Lab	1

Scheme of Instruction

Total Duration : 45 Hrs
 Periods / Week: 1+2-T+P
 Credits: 2
 Instruction Mode: Tutorial + Practical

Scheme of Examination

Maximum Score : 50
 Internal Evaluation : 25
 End/ External Evaluation : 25
 Exam Duration : 3 Hours

Course Objectives:

The objective of this course is to provide intensive practical training to the students in basic chemistry lab and make them understand and master practical skills in the chemistry laboratory, such as handling chemicals, glassware, instrumentation, setting chemistry experiments and important safety rules for carrying out experiments in the chemistry laboratory. We expect that at the end of Semester-I the student will

- Acquire the training for volumetric measurements (using pipettes, measuring jars, volumetric flask and burettes) and making dilutions, etc.
- Practice making standard solutions with pre weighted salts and to make desired dilutions using appropriate techniques.
- Conduct titrations adopting standard procedures and using standard solution for estimation of given Acids or Bases.

Course Outcomes:

- The student should be able to carry out volumetric analysis for the preparation and analyses of given chemical samples and keep a complete and accurate record of experimental methods and data.
- The student should be able to do qualitative and quantitative analysis of lab samples for the determine concentration, molarities and saturation of given sample.

Cycle	Course Content	Instruction Hours
I	Introduction: Volumetric Analysis and Titrimetric 1) Preparation of standard sodium carbonate solution. 2) Estimation of hydrochloric acid using standard sodium carbonate solution. 3) Estimation of sulphuric acid using standard sodium hydroxide solution. 4) Determination of Sodium Hydroxide and Sodium Carbonate in the	23

	<p>given Alkali Mixture Solution.</p> <p>5) Estimation of Mohr's salt solution using standard potassium permanganate solution.</p> <p>6) Estimation of oxalate solution using standard potassium permanganate solution.</p>	
II	<p>1) Determination of Potassium di Chromate using standard sodium thio Sulphate solution</p> <p>Demonstration experiments:</p> <ol style="list-style-type: none"> 1. Determination of melting point of some solids (Urea, Salicylic acid). 2. Determination of boiling point of some solvents (Acetone, Amyl alcohol, Benzene). 3. Determination of High Volume Air Sample. 4. Electrolysis of aq. NaCl solution. 5. Determination of Moisture, Volatile and Ash contents in a given sample of Coal by Proximate Analysis. 	22
<p>Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.</p>		
<p>Text Books and References:</p>		
1	Intermediate chemistry Vol 1&2 Telugu Acedemy	
2	Intermediate Chemistry NCERT for Class XI and XII.	
3	Organic Chemistry R. T. Morrison and R. N. Boyd	
4	Engineering Chemistry Jain & Jain	
5	Engineering Chemistry O.P. Agarwal, Hi-Tech.	
6	Engineering Chemistry Sharma	

Course Code	Course Title	Semester
DPEL101EST	BASIC ELECTRICAL ENGINEERING	1

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 3 L

Credits: 3

Instruction Mode: Theory

Course Objectives:

On completion of the study of the subject the student should be able to comprehend the following:

- To impart the basic knowledge on fundamentals of electrical system, components and circuits
- To explain the working principle, construction, applications of DC machines and motors.
- To impart the basic knowledge about the Electric and Magnetic circuits.
- To understand the Constructional details of Transformer.

Course Outcomes:

- Ability to understand different electrical components and circuits.
- Ability to understand the Constructional details, principle of operation, Performance, of DC Machines.
- Ability to understand Constructional details, principle of operation of Transformers.

Unit	Course Content	Instruction Hours
I	Introduction to Electrical Circuits: An Electrical system, Voltage, Current, Power & Energy, Components: Active & Passive, Ohms Law, Kirchhoff's laws, Series circuits, Parallel Circuits(Using Resistors only), Faradays Law of Electromagnetic Induction, Lenz's law.	15
II	Different types of switches, Connectors, Relays and DC Generators: Different types of switches and connectors used in circuits, their specifications, constructional details and ratings, Fuses, Types of relays- Relay contacts, constructional features of relays. D.C. GENERATOR: Basic principles, brief description of different parts and working, different types, E.M.F equation.	15

III	<p>DC MOTORS & TRANSFORMERS</p> <p>D.C. MOTORS: Basic principles of motor, significance of back E.M.F, Voltage Equation of motor, Types of motor. TRANSFORMERS: WORKING principle of transformer, Construction, EMF equation, losses in transformer and efficiency</p>	15
<p>Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.</p>		
<p>Text Books and References:</p>		
1	S. K. Bhattacharya “Electrical Machines”– Tata McGraw Hill Publications	
2	M. V. Deshpande Electrical machines “– Wheeler Publication.	
3	J. B. Gupta Theory and Performance of Electrical Machine “	
4	K. Mungnesh Kumar D. C. Machines and Transformers “– Vikas Publication	
5	B. L. Thereja A Text Book of Electrical Technology” – S. Chand publication	
6	P.C.Bs by Boshart TMH	

Course Code **Course Title** **Semester**

DPEL101ESP**Basic Electrical Engineering Lab**

1

Scheme of Instruction

Total Duration :45 Hrs

Periods / Week: 1+2-T+P

Credits: 2

Instruction Mode: Tutorial + Practical

Scheme of Examination

Maximum Score : 50

Internal Evaluation : 25

End/ External Evaluation : 25

Exam Duration : 3 Hours

Course Objective:

- To impart the students with the basic knowledge on Electrical Components, wirings and circuit measurements.
- To expose the students to the operation of D.C. machines and transformers and give them experimental skill.

Course Outcome:

Ability to model and analyze electrical apparatus and their application to power system

Cycle	Course Content	Instruction Hours
I	1. Residential House Wiring Using switches, Fuse, Indicator, Lamp and Energy Meter 2. Measurements of Electrical Quantities – Voltage, Current, Power 3. Measurement of Energy Using Single Phase / Three Phase energy Meter 4. Load Characteristics of Shunt Generator 5. Performance Characteristics of a Compound motor	22
II	1. Performance Characteristics of a Shunt motor 2. Performance Characteristics of a Series motor 3. Speed Control of DC motor 4. OC and SC test on Single phase Transformer 5. Load test on Single phase Transformer	23

Examination and Evaluation Pattern:

As per the CBCS Rules and Regulations of Examination Branch of MANUU.

Each Unit will carry equal weightage of marks.**Text Books and References:**

1	S. K. Bhattacharya “Electrical Machines”– Tata McGraw Hill Publications
2	M. V. Deshpande Electrical machines “– Wheeler Publication.
3	J. B. Gupta Theory and Performance of Electrical Machine “
4	K. Mungnesh Kumar D. C. Machines and Transformers “– Vikas Publication
5	B. L. Thereja A Text Book of Electrical Technology” – S. Chand publication

Course Code	Course Title	Semester
DPCS101PCT	Computer Fundamentals	1

Scheme of Instruction

Total Duration : 45 Hrs
 Periods / Week: 3 L
 Credits: 3
 Instruction Mode: Theory

Course Objectives:

On completion of the study of the subject the student should be able to comprehend the following:

- Understand the fundamentals of Computer
- Demonstrate the features of Windows Operating System
- Discuss the features of various Computer Network and Internet.
- Understand Programming Methodology through Algorithms and Flow Charts.

Course Outcomes:

- Students will understand the usage of computers and various operating systems.
- Students will be able to understand and create Word, Excel and Power point files
- Students will be able to write an algorithm and construct flowcharts.
- Students will be able to compare algorithm and flow chart.

Unit	Course Content	Instruction Hours
I	Introduction to Computers: Definition, Different types of computers, Need of computer, Applications of computers in various fields. Organization of a Digital Computer: Block diagram of a digital computer, functional parameters of CPU. Concept of a byte and word. Functional blocks of a CPU: ALU, Control Unit and Memory Unit, various types of memory: RAM ROM, Hard disk and Purpose of cache memory. Basics of GPU: Definition and Block Diagram Number Systems: Binary Number system, Decimal, Binary, hexadecimal and octal codes, Conversion from one number system to another number system,	15
II	Basics of Operating Systems & Internet Define Operating system; describe the need for an operating system. List and discuss the various operating systems used presently. DOS Prompt,	15

	Types of commands, Internal & External Commands. Fundamentals of Internet Basics of a computer network, describe the concept of local area network, wide area network, and metropolitan area network. Compare Internet & Intranet, Basics of E-mail, the purpose of Web browsers; describe the purpose of World Wide Web, FTP, telnet and E-mail, Structure of Universal Resource Locator, describe DNS, functions of an Internet service provider, role of a modem in accessing the Internet, Describe address format and IP address, MAC address, describe DNS and search engines. Know about Social Network sites. Understand Internet Security.	
III	Concept of Programming methodology Steps involved in solving a problem- Concept of Structured program – Flow chart-Algorithm. State the different steps involved in problem solving. State the steps involved in algorithm development. Differentiate algorithm and flowchart. Develop algorithms for simple problems. Draw the symbols used in flowcharts. Draw flowcharts for simple problems. Discuss various programming paradigms.	15
Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.		
Text Books and References:		
1	Information Technology -Curtin	
2	Computer Science Theory and Application- E. Balaguru Swamy, B. Sushila	
3	Introduction to Programming with Raptor by Dr Wayne Brown	

Course Code	Course Title	Semester
DPCS101PCP	Computer Fundamentals Lab	1

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 1+2-T+P

Credits: 2

Instruction Mode: Tutorial + Practical

Course Objectives:

On completion of the study of the subject the student should be able to comprehend the following:

- Understand the fundamentals of Computer
- Features of Windows Operating System
- Installation of Hardware and Software.
- Understand Microsoft Packages.

Course Outcomes:

- Students will understand the usage of computers and windows operating systems.
- It gives an opportunity to students to continue their zeal in research in computer field.

Scheme of Examination

Maximum Score : 50

Internal Evaluation : 25

End/ External Evaluation : 25

Exam Duration : 3 Hours

Unit	Course Content	Instruction Hours
I	<p>DOS: Practice on Internal and External commands, Create and use Batch Files; know the usage of WYSIWY Editor.</p> <p>Windows: Start the windows Operating system, Start a program using the program option of the start menu, Open multiple windows and switch between windows, know how to locate a file using the search option of the Start menu, Open notepad, paint and WordPad programs, Practice locating Files stored on the hard disk drive, Know the various options in “My Computer “icon.</p> <p>Install and Uninstall the software and hardware: Install Windows Operating System, Install and Uninstall software using control panel, Install and Uninstall a new hardware using control panel, Install a modem using control panel, Install a printer using control panel, Usage of system tools, Find out drive space, Carryout Disk Defragmentation, Change resolution, Colour, appearance, screen server options of Display.</p>	22

II	<p>MS Word: Create a formatted word document using MS-Word, Print the Word document using page setup and Print facilities, Create mailing letters for a given information using MS-Word,</p> <p>MS Excel: Create a soft copy of the any statistical data using MS-Excel, Generate Appropriate Chart for the statistical data using MS-Excel, Generate the soft copy of a worksheet using formula facility of MS-Excel, Create a soft copy of a simple database using Excel. Run sort and filter facilities for the database, Understand Excel Marcos, Draw different chats.</p> <p>MS Power Point: Create a power point presentation for a simple technical topic using MS-PowerPoint.</p> <p>CD/ DVD Writing: Create a backup CD for a data using NERO or similar CD writing software, Create an user account on the Internet and e-mail and sending a document to from a given e-mail address.</p> <p>Basics of Internet: Create an Email Id, Send and receive Emails, send an attachment in e-Mail, Using different search engines for finding required sites to collect information on engineering related topics including down loading the contents.</p> <p>Draw Flow Charts using Raptor Software.</p>	23
<p>Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.</p>		
<p>Text Books and References:</p>		
1	Information Technology -Curtin	
2	Computer Science Theory and Application- E. Balaguru Swamy, B. Sushila	
3	Introduction to Programming with Raptor by Dr Wayne Brown	

Course Code DPCE101ESP	Course Title ENGINEERING GRAPHICS LAB- I	Semester 1
----------------------------------	--	----------------------

Scheme of Instruction

Total Duration : 45 Hrs
 Periods / Week: 1+2-T+P
 Credits:2
 Instruction Mode: Lecture + Practical

Scheme of Examination

Maximum Score : 50
 Internal Evaluation : 25
 End/ External Evaluation : 25
 Exam Duration : 3 Hours

Course Objectives:

- Free hand sketching to aid in the visualization process and to effectively communicates ideas graphically.
- Learn to sketch and take field dimensions and transform it into graphic drawings
- Learn basic engineering drawing formats
- Prepare the student for future Engineering positions

Course Outcomes :

At the end of the course, the students will be able to

1. Perform basic sketching techniques
2. Produce engineered drawings
3. Convert sketches to engineered drawings
4. Illustrate simple clear and illustrative drawings as per existing standards/conventions.

Cycle	Course Content	Instruction Hours
I	1. Importance of Engineering Drawing, Scope and objectives.	30
	2. Engineering Drawing Instruments introduction and its using methods.	
	3. Basic concept of bordering and title box for different type of sheets.	
	4. Freehand lettering.	
	5. Freehand Numbering	
	6. Dimension practice	
II	1. Division of a line	30
	2. Construction of tangent lines and arcs.	

	3. Construction of polygon	
	4. Different types of Conical Curves.	
	5. Different types of special curves	
	6. Exercise.	
Examination and Evaluation Pattern:		
As per the CBCS Rules and Regulations of Examination Branch of MANUU.		
Each Unit will carry equal weightage of marks.		
Text Books and References:		
1	First Year Engineering Drawing – B.R. Gupta.	
2	Engineering Drawing by N.D.Bhatt.	
3	“A First Year Engineering Drawing” A.C. Parkinson (Metric Edition).	
4	T.S.M. & S.S.M on “Technical Drawing” prepared by T.T.T.I., Madras.	
5	SP-46-1998 – Bureau of Indian Standards.	
6	Introduction to Engineering Drawing R.C.Mouli , V.Rama Rao, M. Venkateswarlu	

Course Code	Course Title	Semester
DPCC201HST	ENGLISH-II	2

Scheme of Instruction

Total Duration : 30 Hrs
 Periods / Week: 2-L
 Credits: 2
 Instruction Mode: Lecture

Scheme of Examination

Maximum Score : 50
 Internal Evaluation : 15
 End/ External Evaluation : 35
 Exam Duration : 2 Hours

Course Objectives

The course enables the students to:

- Understand the need to learn English
- Listen for general comprehension
- Read and comprehend English
- Learn various grammatical structures
- Learn to excel in various forms of written communication

Course Outcomes

At the end of the course the students are able to:

- Use classroom expressions meaningfully
- Listen and understand general specific information
- Identify main ideas, specific ideas by reading.
- Use basic sentence structures in spoken and written forms
- Generate ideas for writing a paragraph

Unit	Course Content	Instruction Hours
I	Listening & Speaking Fixing and cancelling appointments, Extending and accepting invitations, Giving Instructions, Asking for and giving directions	10
II	Reading An Environmental challenge, Waiting for Mr Clean	10
III	Grammar and Writing The Here and Now!, Basic Sentence Structures, Voice, Reported speech, Error analysis, Data Interpretation, Writing a covering letter & Resume	10

Examination and Evaluation Pattern:

As per the CBCS Rules and Regulations of Examination Branch of MANUU.

Each Unit will carry equal weightage of marks.

Text Books and References:

1	Essential English Grammar (Intermediate level) - Raymond Murphy
2	Learn English (A Fun Book of Functional Language, Grammar and Vocabulary) -Santanu Sinha Chaudhuri
3	Grammar builder (Entire Series) - Oxford University Press
4	Word Power made Easy - Norman Lewis

Course Code	Course Title	Semester
DPCC203BST	Engineering Mathematics-II	2

Scheme of Instruction

Total Duration : 45 Hrs
 Periods / Week: 3-L
 Credits: 3
 Instruction Mode: Theory

Scheme of Examination

Maximum Score : 100
 Internal Evaluation : 30
 End/ External Evaluation : 70
 Exam Duration : 3 Hours

Course Objectives:

- To introduce the concept of differentiation and its applications
- To introduce the concept of integration and its rules
- To evaluate the integrals of rational algebraic functions
- To introduce the concept of linear differential equations and their solution

Course Outcomes:

At the end of the course, the students will be able to

- Solve problems on derivative of various functions.
- Apply different rules and methods of integration while solving problems.
- Evaluate the integrals of rational algebraic functions and area problems.
- Find the solution of linear differential equations.

Unit	Course Content	Instruction Hours
I	DIFFERENTIAL CALCULUS AND ITS APPLICATIONS Basic Concept of theory of limit in order to clarify the concept of continuity which would lay the foundation for study of differentially and differentiation of a function. First principle of Differentiation, Fundamental Rule for Differentiations, which allows us to find the Derivatives of a function directly without using definitions, Chain Rule.	15
II	INTEGRAL CALCULUS, INTEGRATIONS Indefinite Integral (Inverse process of Differentiations) Fundamental Integrations, Formulas and Standard Rules of integration, Method of integration, Integrations by Substitute method, Integration by Parts.	15
III	DIFFERENTIAL EQUATIONS Definitions of differential equations, Order and Degree of Differential Equations and Related problems, Solution of differential equations, Differential equations of first degree and first order and its problems, Variables Separable Forms. Homogeneous differential equations, Reducible to homogeneous form, Linear differential equations and equations of reducible to linear form and related problems. Particular integrals for the functions $\sin ax$, $\cos ax$. Exact Differential Equations and Equations of Reducible to Exact Form and Problems. BASICS OF PARTIAL DERIVATIVES - First Order and second order partial derivatives.	15

Examination and Evaluation Pattern:

As per the CBCS Rules and Regulations of Examination Branch of MANUU.

Each Unit will carry equal weightage of marks.

Text Books and References:

1	Text book of Engineering Mathematics –I &II by G.Srinagesh, and others –FALCON Publishers
2	Text book of intermediate Mathematics I & II by Telugu Academy.
3	Differential Calculus by Manicavachagom Pillai.
4	Differential Calculus and Integral Calculus by N.P. BALI
5	Integral Calculus by S.Chand.
6	Text book of Engineering Mathematics – I&II by Radiant

Course Code	Course Title	Semester
DPCC201BST	Engineering Physics-II	2

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 3-L

Credits: 3

Instruction Mode: Theory

Scheme of Examination

Maximum Score : 100

Internal Evaluation : 30

End/ External Evaluation : 70

Exam Duration : 3 Hours

Course Objectives:

The objective of the course is to develop basic understanding of the concepts of physics among students, which are fundamental to many advance courses which students will learn as part of their technical training. We expect that at the end of Semester-II the student will

Course Outcomes:

- Understand the importance of sound and its applications
- Acquire Basic ideas of optics and its related phenomenon.
- Understand the concepts of electricity and magnetism.
- Explain the phenomena of fiber optics, superconductivity and photoelectric effect.

Unit	Course Content	Instruction Hours
I	<p>SOUND Introduction to properties of sound, Distinguish between musical sound and noise, speed of sound in solids, Liquids and Gases, Newton's Formula Laplace's correction for velocity of sound in gasses, Explain the phenomenon of beats, state the applications of beats, Explain Doppler effect, Derive formula for apparent frequency – (i) Source in Motion and observer at rest (ii) Observer in motion and source at rest, Applications of Doppler effect, Absorption of sound waves, Absorption coefficient of a substance, Explain Reverberation and Reverberation time, Write Sabine's formula Explain echoes and also state its applications. Solve the related problems.</p> <p>LIGHT Introduction to properties of light, Reflection, refraction, refractive index, Snell's law, critical angle, total internal reflection, What is optical fibre and explain the working and construction of optical fiber, write its applications. Explain refraction of light from convex lens, problems Solving.</p>	15
II	<p>ELECTRICITY Introduction to Electricity, Electric Field and Potential, Explain Alternating current and Direct Current, Ohm's law and write the formula, Definitions of Resistance, specific resistance, conductance and their units,. Statements of Kirchhoff's laws and explanation, Describe</p>	15

	<p>Wheatstone bridge with legible sketch Derive an expression for balancing condition of Wheatstone bridge, Describe Meter bridge Experiment for determination of specific resistance with neat circuit diagram, problems Solving.</p> <p>MAGNETISM</p> <p>Introduction to magnetism, pole strength, Coulomb's inverse square law of magnetism, Definition of magnetic field, Magnetic moment, magnetic lines of force and write the properties of magnetic lines of force, Magnetic induction field strength-units, Uniform and Non- Uniform Magnetic fields, Moment of couple on a bar magnet placed in a uniform magnetic field, Derivation for Magnetic induction field strength at a point on the axial line and at a point on the equatorial line & problems Solving.</p>	
III	<p>MODERN PHYSICS</p> <p>Introduction to crystals, Explain energy bands in solids, Explain conductors, insulators and Semiconductors based on band theory, Explain intrinsic semiconductors, doping of semiconductor, and extrinsic semiconductors, Explain p-type and n-type semiconductor, Explain p-n junction diode, forward and reverse bias. Application of semiconductors. Explain Photo-electric effect & Einstein's photoelectric equation, State laws of photoelectric effect, Working of photoelectric cell, Applications of photoelectric effect, Definition of super conductor and superconductivity Examples of superconducting materials, Properties of Superconductors Applications of superconductors & problems solving</p>	15
<p>Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.</p>		
<p>Text Books and References:</p>		
1	Concepts of Physics by HC VERMA, Surya Publication. Ghaziabad, India	
2	Physics – Resnick and Halliday – Wisley Toppan publishers – England	
3	Physics – Intermediate –I & II year – Telugu Academy, Telangana, India	
4	Intermediate physics – Volume I & II Engineering Physics by SB SING	
5	P.K Palaniswamy: A text book of Engineering Physics.	
6	C.Kittel(Wiley Eastern): Introduction to Solid State Physics.	

Course Code	Course Title	Semester
DPCC201BSP	Engineering Physics Lab-II	2

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 1+2-T+P

Credits: 2

Instruction Mode: Tutorial + Practical

Course Objectives:

On completion of the practical of the subject the student should be able to develop the following skills:

- Handling the apparatus with precautions
- Develop skill of observing and taking reading
- Improve analytical skills by calculation.
- Improve his systematic approach and research attitude.

Course Outcomes:

- Provide familiarity with apparatus and enable them to handle the instruments and apparatus with purpose.
- Demonstrate the principles covered in your study material in physics.
- Learn how to do science experiments.
- Develop an attitude of perfection in practical tasks.

Scheme of Examination

Maximum Score : 50

Internal Evaluation : 25

End/ External Evaluation : 25

Exam Duration : 3 Hours

Cycle	Course Content	Instruction Hours
I	1. Determine the Velocity of sound in air using resonance column Apparatus at room temperature and at 0° C. 2. Determine the Focal Length and focal power of convex lenses Separately 3. Determined the combined Focal Length and focal power of convex lenses 4. Determine the Refractive index of Solid Using Travelling microscope.	30
II	1. Determine the resistance and specific resistance of the wire using Meter Bridge 2. Verify the resistance of the given wires using Meter Bridge in series and parallel combinations 3. Draw the lines of force of combined magnetic field due to bar magnet in earth's magnetic field by locating the null points when North pole of the bar magnet pointing towards Geographical North of the Earth. 4. Draw the lines of force of combined magnetic field due to bar magnet in earth's magnetic field by locating the null points when North pole of the bar magnet pointing towards Geographical North of the Earth 5. Draw the voltage-current characteristic of P-n diode.	30

Examination and Evaluation Pattern:

As per the CBCS Rules and Regulations of Examination Branch of MANUU.

Each Unit will carry equal weightage of marks.

Text Books and References:

1	Concepts of Physics by HC VERMA, Surya Publication. Ghaziabad, India
2	Physics – Resnick and Halliday – Wisley Toppan publishers – England
3	Physics – Intermediate –I– Telugu Academy, Telangana, India
4	Intermediate physics – Volume I & II Engineering Physics by SB SING
5.	MANUU Laboratory Manual in Engineering Physics

Course Code	Course Title	Semester
DPCC202BST	Engineering Chemistry & Environmental Science	2

Scheme of Instruction

Total Duration : 45 Hrs
 Periods / Week: 3-L
 Credits: 3
 Instruction Mode: Lecture

Scheme of Examination

Maximum Score : 100
 Internal Evaluation : 30
 End/ External Evaluation : 70
 Exam Duration : 3 Hours

Course Objectives:

The objective of the course is to provide basic information and understating of most important chemical issues of our daily life like fuels for safe and green energy, Polymers and various environmental challenges like Air/Water and Soil pollution. We expect that at the end of Semester-II the student will

- Understand the importance Polymers and its applications in our daily life.
- Acquire Basic ideas of water technology
- Understand the characteristics of good fuels.
- Gain knowledge about environmental chemistry and various factors related.

Course Outcomes:

- The student should be able to describe several fundamental concepts about Polymers, Plastic and its advantages and disadvantages over traditional materials.
- The student should be able to explain the scope and importance of environmental studies and can help solve environmental challenges like, global warming and pollution.
- The student should be able to recognize the essential qualities of drinking water and methods of softening of hard water.

Unit	Course Content	Instruction Hours
I	<p>POLYMERS AND ADVERSE EFFECTS OF COMMONLY USED CHEMICALS</p> <p>a. POLYMERS</p> <p>1. General Introduction and Classification of Polymers. 2. Polymerization-Types of polymerization: addition, condensation and copolymerization with examples. 3. Plastics: Types of plastics, Advantages of plastics over traditional materials and Disadvantages of using plastics. 4. Preparation and uses of the following plastics: 1. Polytehene 2. PVC 3. Teflon 4. Polystyrene 5. Urea formaldehyde 6. Bakelite. 5. Natural rubber: processing from latex –Vulcanization of rubber.</p>	15

	<p>6. Elastomers: Butyl rubber, Buna-s, Neoprene rubber and their uses.</p> <p>b. CHEMICALS IN DAILY LIFE</p> <p>1. Chemicals in Medicines: Analgesics, Disinfectants, Antibiotics, Antacids.</p> <p>2. Chemicals in Food: Preservatives, Artificial Sweetening Agents, Elementary idea of Antioxidants.</p> <p>3. Cleansing agents: Soaps and Detergents, Cleansing Action of soap.</p>	
II	<p>METALLURGY AND THE CHEMICAL RESOURCES OF ENERGY</p> <p>a. METALLURGY:</p> <p>1. General Introduction of Metallurgy: Characteristics of metals and distinction between metals and non metals.</p> <p>2. Terms and terminologies-mineral, ore, gangue, flux, slag.</p> <p>3. Types of furnaces: Blast furnace, Reverberatory furnace and Muffle furnace.</p> <p>4. Concentration of ore: Methods of concentration of ore-froth flotation process.</p> <p>5. Methods of extraction of crude metal: Roasting, calcination, smelting.</p> <p>6. Alloys: composition and uses of Brass, German silver and Nichrome.</p> <p>b. FUELS</p> <p>1. General Introduction of fuels</p> <p>2. Definition and classification of fuels. Characteristics of good fuel.</p> <p>3. Composition and uses of gaseous fuels: a) water gas, b) producer gas, c) natural gas, d) coal gas, e) Bio gas and f) acetylene</p>	15
III	<p>ENVIRONMENTAL STUDIES AND WATER TECHNOLOGY</p> <p>a. ENVIRONMENTAL STUDIES</p> <p>1. General introduction to environmental studies.</p> <p>2. Environment, scope and importance of environmental studies</p> <p>3. Important terms and terminology in Environmental Chemistry – renewable and non renewable energy sources.</p> <p>4. Concept of ecosystem, producers, consumers and decomposers</p> <p>5. Biodiversity, definition and threats to Biodiversity.</p> <p>6. Air pollution – Causes and Effects; acid rain; green house effect and global warming; Ozone depletion. Control measures of air pollution</p> <p>7. Water pollution –Causes and effects. Control measures of water pollution.</p> <p>b. WATER TECHNOLOGY</p> <p>1. General Introduction to Water Technology.</p> <p>2. Sources of Water; Soft and Hard Water; Causes of Hardness of water.</p> <p>3. Types of hardness. Disadvantages of Hard Water. Degrees of hardness. Numerical problems related to degree of hardness.</p> <p>4. Softening of Water-Permutit process and ion exchange process.</p> <p>5. Drinking water & its qualities. Municipal treatment of water for drinking purpose. Osmosis, Reverse Osmosi. Advantages of Reverse osmosis and its applications.</p>	15

Examination and Evaluation Pattern:

As per the CBCS Rules and Regulations of Examination Branch of MANUU.

Each Unit will carry equal weightage of marks.

Text Books and References:

1	Intermediate chemistry Vol 1&2 Telugu Acedemy
2	Intermediate Chemistry NCERT for Class XI and XII.
3	Organic Chemistry R. T. Morrison and R. N. Boyd
4	Engineering Chemistry Jain & Jain
5	Engineering Chemistry O.P. Agarwal, Hi-Tech.

Course Code	Course Title	Semester
DPCC202BSP	Engineering Chemistry & Environmental Science Lab	2

Scheme of Instruction

Total Duration : 45 Hrs
 Periods / Week: 1+2-T+P
 Credits: 2
 Instruction Mode: Tutorial + Practical

Scheme of Examination

Maximum Score : 50
 Internal Evaluation : 25
 End/ External Evaluation : 25
 Exam Duration : 3 Hours

Course Objectives:

The objective of the course is to encouraging students to apply those pre-learned practical skills in the chemistry laboratory (Sem-I) to investigate the various environmental issues in real-life situations. We expect that at the end of Semester-II the student will

- Conduct titrations adopting standard procedures to determine the alkalinity/Acidity, total hardness and chloride present in the given samples of water.
- Conduct the test using titrometric / electrometric method to determine Dissolved Oxygen (D.O) in given water samples and conduct the test on given samples of water / solutions to determine their pH using standard pH meter.

Course Outcomes:

- The student should be able to determine the Alkalinity/Acidity, Total hardness and chloride present in the given samples of water.
- The student should be able to determine Dissolved Oxygen (D.O) using chemical methods and determine the pH of given sample using standard pH meter.
- The student should be able to analyze the Air/Water pollution level using various chemical techniques and instruments.

Project

Scientific investigations involving laboratory testing and collecting information from other sources.

Suggested project

- Testing the hardness, presence of iron, fluoride, chloride etc. depending upon the regional variation in drinking water and the study of causes of presences of these ions above permissible limit (if any).

Cycle	Course Content	Instruction Hours
I	<p>Introduction: Basic concepts of Water Analysis</p> <ol style="list-style-type: none"> Determination of Total Hardness, Temporary and Permanent Hardness given Water Sample using EDTA Solution. Determination of Acidity of Water Sample. Determination of Alkalinity of Water Sample. Estimation of Chloride present in Water Sample. Determination of Free Chlorine in given Water Sample. Estimation of Dissolved Oxygen in Water Sample. 	22
II	<p>Demonstration Experiments:</p> <ol style="list-style-type: none"> Determination of pH of Water using pH meter. Determination of Turbidity of Water Sample. Estimation of Total Solids Present in Water Sample. Determination of Conductivity of Water. Removal of hardness of water by using Chromatographic method. Synthesis of Rubber (a simple polymer). 	23

Examination and Evaluation Pattern:

As per the CBCS Rules and Regulations of Examination Branch of MANUU.

Each Unit will carry equal weightage of marks.

Text Books and References:

1	Intermediate chemistry Vol 1&2 Telugu Acedemy
2	Intermediate Chemistry NCERT for Class XI and XII.
3	Organic Chemistry R. T. Morrison and R. N. Boyd
4	Engineering Chemistry Jain & Jain
5	Engineering Chemistry O.P. Agarwal, Hi-Tech.
6	Engineering Chemistry Sharma

Course Code	Course Title	Semester
DPEL201PCT	BASIC ELECTRONICS	2

Scheme of Instruction

Total Duration : 45 Hrs
 Periods / Week: 3-L
 Credits: 2
 Instruction Mode: Lecture

Scheme of Examination

Maximum Score : 100
 Internal Evaluation : 30
 End/ External Evaluation : 70
 Exam Duration : 3 Hours

Course Objectives:

On completion of the study of the subject the student should be able to comprehend the following:

- A fundamental understanding of the use of meters and test equipment used to measure electrical quantities.
- A fundamental understanding of voltage, current resistance and power in dc circuits and network analysis using Ohms Law,
- Study the working principle of PN junction diode and transistor
- Understand the working principle of different types of rectifiers
- Understand the different transistor configurations and Analyze them

Course Outcomes:

- Determine the behavior of simple passive electrical circuits with independent voltage and current sources.
- Understand the working of Transistors, Semiconductor diodes and their applications.

Unit	Course Content	Instruction Hours
I	Fundamentals of electrostatics, resistors and their uses: Definition of charge, electric potential, electric field, voltage, current. Coulombs law Classification of resistors, colour code, Specifications, preferred values of resistors, properties and uses of Carbon and wire wound resistors and their characteristics. Potentiometer, Effect of temperature on resistance. Thermistors, sensistors. Capacitors and Inductors used in electronic circuits and their applications: Classification, specifications of capacitors, colour code, dielectric constant, dielectric strength, properties and applications of paper, mica, ceramic polyester, polystyrene, glass and electrolytic capacitors. Variable capacitors and applications, capacitor connected in series and parallel. Energy stored in capacitors. Self Inductance, mutual inductance, coefficient of coupling. Classification of inductors, specifications, different core materials. Inductors in series and	15

	parallel.	
II	<p>Semiconductor Materials and Devices: Electrical properties, energy level diagrams of conductor, semi conductor and Insulator. Formation of P-Type and N-Type materials and their properties. Drift and diffusion current, formation and behaviour of PN junction diode, Zener diode and its characteristics.</p> <p>Rectifiers: Half wave rectifier, Full wave rectifier, (Bridge & centre tapped) and their characteristics</p> <p>Filters: Types of filters, operation, their characteristics and comparison, limitations & advantages of filters</p>	15
III	<p>Transistor: Formation and properties of PNP and NPN Transistor, Transistor configurations, input and output characteristics. α, β, and γ factors. Comparison of CB, CE, and CC configurations. Transistor as an amplifier, FET, MOSFET.</p>	15

Examination and Evaluation Pattern:

As per the CBCS Rules and Regulations of Examination Branch of MANUU.

Each Unit will carry equal weightage of marks.

Text Books and References:

- | | |
|----|---|
| 1. | Basic Electronics, Grob Bernard, Fourth Edition, McGraw Hills |
| 2. | Electronic components by Dr.K.Padmanabham. |
| 3. | Electrical Technology Vol 1 &2 by B.L. Theraja |

Course Code	Course Title	Semester
DPEL201PCP	BASIC ELECTRONICS LAB	2

Scheme of Instruction

Total Duration : 45 Hrs
 Periods / Week: 1+2-T+P
 Credits: 3
 Instruction Mode: Tutorial + Practical

Scheme of Examination

Maximum Score : 50
 Internal Evaluation : 25
 End/ External Evaluation : 25
 Exam Duration : 3 Hours

Course Objectives:

- To become familiar with fundamental electronic circuits.
- To learn to use common electronic instrumentation.
- To become familiar with soldering and testing.
- To be able to design electronic circuits to perform realistic tasks.

Course Outcomes:

- The ability to apply theoretical knowledge to design and conduct experiments using designed circuits
- The students will have the ability to identify, formulate, and solve problems related to PCB design and generate manufacturing files
- The students will have the ability to identify, formulate, and solve problems associated with assembly and testing of electronic circuits

Unit	Course Content	Instruction Hours
I	Soldering Practice (Assembling and De-assembling of components on PCB) Test and measure the value of capacitor using R.L.C. meter, ohmmeter / multimeter and compare with the marked / colour code value. Measurement of resistance, AC/DC voltages and current using analogue and digital multi meters. Study of AF / RF signal generators and C.R.O. Study of various regulated power supplies.	23
II	Testing of transformer Voltage & resistance measurement. Characteristics of semiconductor diodes (Si, Ge). Characteristics of Zener diode. Characteristics of Bipolar -junction transistor in CE mode (Input & Output). Characteristics of Bipolar -junction transistor in CB mode (Input & Output).	22

Course Code	Course Title	Semester
DPCS201PCT	Programming in C	2

Scheme of Instruction

Total Duration : 45 Hrs
 Periods / Week: 3-L
 Credits: 3
 Instruction Mode: Lecture

Scheme of Examination

Maximum Score : 100
 Internal Evaluation : 30
 End/ External Evaluation : 70
 Exam Duration : 3 Hours

Course Objectives:

On completion of the study of the subject the student should be able to comprehend the following:

- Understand the Sequential structure, selective structure, repetitive structure.
- Know about Arrays, Strings and Functions
- Basics of Pointer, Structures and Unions.
- Understand the File processing techniques and Pre-processor directives.

Course Outcomes:

- Students will understand the Basics of c programming language.
- Choose the loops and decision statements to solve problems
- Understand pointers, structures and unions
- Implement file operations in c language.
- It gives an opportunity to students to continue their zeal in research in computer field.

Unit	Course Content	Instruction Hours
I	<p>Programming constructs</p> <p>Sequential structure: Various types of data, Arithmetic operators, Assignment statement , Assignment operators , printf, scanf, Type conversion techniques ,Macro define</p> <p>Selective Structure: Relational operators - Logical operators - Logical expressions - Conditional operator – bit wise operators -Conditional statements - Multi way condition statement - Switch statement</p> <p>Repetitive structures: Iterative loops, Nesting, break, continue statements null statement, comma operator.</p>	15
II	<p>Arrays, Strings and Functions</p> <p>Array - Array declaration - Access to array elements - Initialization of Array elements and - Arrays as arguments</p>	15

	<p>String – Declaration of Strings – various String Functions.</p> <p>Function- Return statement – Function prototypes - local and external variables – Automatic and static variables, Recursion.</p>	
III	<p>Pointers</p> <p>Pointer - Address and de-referencing operators - Declaration, Assignment and Initialization of a pointer - Pointer Arithmetic - Pointer comparison, conversion parameter passing by reference – Relation between arrays and pointer – String manipulation using pointer - Pointer arrays - Pointer to function- Dynamic memory management functions.</p> <p>Structures and Unions</p> <p>Structures initialization, access concept - Size of a structure - Pointers to structure – Relationship between structure and function - Structures function arguments and function values - Relation between structure and arrays –Structure containing pointers –self Referential structure – Unions</p> <p>File processing and Pre processor directives- File processing facility - Pre processor directives.</p>	15
<p>Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.</p>		
<p>Text Books and References:</p>		
1	Information Technology - Curtin.	
2	Computer Science Theory and Application - E. Balaguruswamy, B. Sushila	
3	Programming in ANSI C - Balagurusamy - TMH	
4	Programming in C - K.R. Venugopal and H.S. Vimala	
5	Programming With 'C' - Ghosh (PHI)	

Course Code	Course Title	Semester
DPCS201PCP	Programming in C Lab	2

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 1+2-T+P

Credits: 2

Instruction Mode: Tutorial + Practical

Scheme of Examination

Maximum Score : 50

Internal Evaluation : 25

End/ External Evaluation : 25

Exam Duration : 3 Hours

Course Objectives:

On completion of the study of the subject the student should be able to comprehend the following:

- To make the student to learn a programming language.
- To practice various c programs to solve the problems.
- To introduce the concept of arrays, functions, pointers, structure, unions and files.

Course Outcomes:

On completion of the course, the students will be able to:

- Students will able to write different c programs to solve different problems.

Unit	Course Content	Instruction Hours
I	<ol style="list-style-type: none"> 1. A Fibonacci Sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence. 2. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user. 3. Write a C program to find the roots of a quadratic equation. 4. Write C programs that use both recursive and non-recursive functions <ol style="list-style-type: none"> i) To find the factorial of a given integer. ii) To find the GCD (greatest common divisor) of two given integers. 5. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement) 6. Write a C program to find both the largest and smallest number in a list of integers. 	22
II	<ol style="list-style-type: none"> 1. Write a C program to find the sum of individual digits of a positive integer. 	23

	<ol style="list-style-type: none"> 2. Write a C program that uses functions to perform the following: <ol style="list-style-type: none"> a. Addition of Two Matrices b. Multiplication of Two Matrices 3. Write a C program on Parameter Passing Techniques 4. Write a C program on operations on Pointers. 5. Write a C program to determine if the given string is a palindrome or not 6. Write a C program which copies one file to another. 	
<p>Examination and Evaluation Pattern: As per the CBCS Rules and Regulations of Examination Branch of MANUU. Each Unit will carry equal weightage of marks.</p>		
<p>Text Books and References:</p>		
1	C programming and Data Structures, P. Padmanabham, Third Edition, BS Publications	
2	Programming in C Second Edition by Reema Tharej	
3	Let us C Solutions by Yashavant P. Kanetkar	

Course Code	Course Title	Semester
DPCE201ESP	ENGINEERING GRAPHICS LAB- II	2

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 1+2-L+P

Credits: 3

Instruction Mode: Lecture + Practical

Scheme of Examination

Maximum Score : 50

Internal Evaluation : 25

End/ External Evaluation : 25

Exam Duration : 3 Hours

Course Objectives:

- General projection theory, with emphasis on orthographic projection to represent in two-dimensional views (principal, auxiliary, sections).
- Dimension and annotate two-dimensional engineering drawings.
- The application of industry standards and best practices applied in engineering graphics.
- Theoretical concepts delivered in this course which would help the students to understand the design considerations and tolerances to be used in the design and manufacture of engineering components.

Course Outcomes :

At the end of the course, the students will be able to

- Increase ability to communicate technical aspects of drawing with people.
- Draw orthographic projections and sections.
- Learn to take data and transform it into graphic drawings
- Draw the two dimensional drawings.
- Learn basic engineering formats.

Cycle	Course Content	Instruction Hours
I	1. Projection of points	23
	2. Projection of lines	
	3. Projection of solids	
	4. Basic concept of Orthographic Projection. For prisms & pyramids.	
	5. Construction of Sectional Views.	
	6. Construction of true shape.	
II	1. Auxiliary view	22
	2. Pictorial drawings	
	3. Drawing of Isometric View.	
	4. Identify the correct pictorial views from a set of Orthographic drawings.	
	5. Development of surfaces	
	6. Prepare development of simple Engineering objects.	
Text Books and References:		
1	First Year Engineering Drawing – B.R. Gupta.	
2	Engineering Drawing by N.D.Bhatt.	