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

Computer Science & Engineering

MANUU POLYTECHNIC
DIPLOMA IN
(COMPUTER SCIENCE AND ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION (CBCS)

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
(COMPUTER SCIENCE AND ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION (CBCS)

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
(COMPUTER SCIENCE AND ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION (CBCS)

Sno.	Course Code	Course Name	L	T	P	Credits	Internal Marks	External Marks	Total Marks
		Semester III							
1	DPCC301BST	Engineering Mathematics – III	3	-	-	3	30	70	100
2	DPCS301PCT	Database Management Systems	3	-	-	3	30	70	100
3	DPCS301PCP	Database Management Systems Lab	-	1	2	2	25	25	50
4	DPCS301EST	Digital Electronics and Computer Architecture	3	-	-	3	30	70	100
5	DPEL302PCP	Digital Electronics Lab	-	1	2	2	25	25	50
6	DPCS302PCT	Computer Hardware and Networking	3	-	-	3	30	70	100
7	DPCS302PCP	Computer Hardware and Networking Lab	-	1	2	2	25	25	50
8	DPCS303PCT	Data Structures through C	3	-	-	3	30	70	100
9	DPCS303PCP	Data Structures through C Lab	-	1	2	2	25	25	50
10	DPCC301SEP	Basic Communication and Presentation Skills Lab	-	1	2	2	25	25	50
Total Credits (Semester III)			30		25	275	475	750	

MANUU POLYTECHNIC
DIPLOMA IN
(COMPUTER SCIENCE AND ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION (CBCS)

Sno.	Course Code	Course Name	L	T	P	Credits	Internal Marks	External Marks	Total Marks
		Semester IV							
1	DPCS401PCT	System Administration	3	-	-	3	30	70	100
2	DPCS401PCP	System Administration Lab	-	1	2	2	25	25	50
3	DPCS402PCT	Microprocessors and Interfacing	3	-	-	3	30	70	100
4	DPCS402PCP	Microprocessors and Interfacing Lab	-	1	2	2	25	25	50
5	DPCS403PCT	Web Designing	3	-	-	3	30	70	100
6	DPCS403PCP	Web Designing Lab	-	1	2	2	25	25	50
7	DPCS404PCT	OOPS through C++	3	-	-	3	30	70	100
8	DPCS404PCP	OOPS through C++ Lab	-	1	2	2	25	25	50
9	DPCS405PCT	Operating Systems	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
(COMPUTER SCIENCE AND ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION (CBCS)

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	DPCS501PCT	Java Programming	3	-	-	3	30	70	100
3	DPCS501PCP	Java Programming Lab	-	1	2	2	25	25	50
4	DPCS502PCT	.NET Programming	3	-	-	3	30	70	100
5	DPCS502PCP	.NET Programming Lab	-	1	2	2	25	25	50
6	DPCS503PCP	Computer Animations Lab	-	1	2	2	25	25	50
7	DPIT501SET	Internet of Things	3	-	-	3	30	70	100
8	DPIT501SEP	Internet of Things Lab	-	1	2	2	25	25	50
9	DPCC501SEP	Employability Skills Lab	-	1	2	2	25	25	50
10	Electives								
	DPCS501PET	Cloud Computing	3	-	-	3	30	70	100
	DPCS502PET	Information Security							
	DPCS503PET	Software Engineering							
Total Credits (Semester V)			30		25	275	475	750	

MANUU POLYTECHNIC
DIPLOMA IN
(COMPUTER SCIENCE AND ENGINEERING)
SCHEME OF INSTRUCTION, EXAMINATION & EVALUATION (CBCS)

Sno.	Course Code	Course Name Subject	L	T	P	Credits	Assessments Marks	
							Semester VI	
1	DPCS601PCP	Industrial Training	-	-	-	11	First Assessment	250
							Second Assessment	250
							Final Assessment	100
Total Credits (Semester VI)						**11**	**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	Scheme of Examination
Total Duration : 30 Hrs	Maximum Score : 50
Periods / Week: 2-L/T	Internal Evaluation : 15
Credits: 2	End/ External Evaluation : 35
Instruction Mode: Lecture + Tutorial	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 :** 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
DPCC103BST	**ENGINEERING MATHEMATICS-I**	1

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3 L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation:70
Instruction Mode: Theory	Exam Duration : 3 Hours

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.

Unit	Course Content	Instruction Hours
I	**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. **PARTIAL FRACTION:** Introduction Rational Fraction and Some Fundamental Rules To Resolve a Proper Fraction **f(x)/g(x)** into Partial Fraction. **BINOMIAL THEOREM**: - Binomial Theorem Statement (without proof) Properties of Binomial Theorem and its Applications. **FUNCTIONS AND RELATIONS –:** Types of Functions, Inverse Functions, Domain, Range, and Inverse of real valued function.	15
II	**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 Crammer's rule.	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	**Scheme of Examination**

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

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	**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. **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.	15
II	**Kinematics** Introduction, Write the equation of motion in a straight line, Explain the	15

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,

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.

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

III	**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 **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	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	Scheme of Examination

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

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	22
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.	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	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	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3 L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation:70
Instruction Mode: Theory	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 it's 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	**SOME BASIC CONCEPTS OF CHEMISTRY**: **A-** **General Introduction:** Importance and Scope of Chemistry. **B-** **Atomic structure;-**Fundamental particles of an atom-Bohr's atomic theory and its limitations-Quantum numbers. **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. **D-** **Modern Periodic Table and Periodic Law.**	15

	E- Chemical bonding:- Ionic, Covalent, Coordinate covalent bond with examples. **F- Organic Chemistry-** General Introduction and Classification of Organic Compounds. **G- Hydrocarbons:** Classification of Hydrocarbons, Homologues series. a) Alkanes – Ethane b) Alkenes – Ethene c) Alkynes – Ethyne and Benzene. **H- Types of Functional groups** with examples.**- Isomerism;** Structural Isomers. **I- Types of Organic reactions:** a) Addition Reactions b) Substitution Reactions.	

II	**SOLUTIONS AND ACIDS AND BASES**
	   A- Solutions-
	     1. General Introduction of solutions: Classification of Solutions-Aqueous and non- aqueous solution.
	   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.
	   C- Acid and Bases:
	     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	**ELECTROCHEMISTRY AND CORROSION**
	   A- ELECTROCHEMISTRY
	     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

Secondary batteries, lead acid storage battery **Fuel cells:** Definition, Hydrogen-oxygen fuel cell.

B- Corrosion:

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.

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
DPCC102BSP	**Engineering Chemistry Lab**	1

Scheme of Instruction

Scheme of Examination

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

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	1. Preperation of standard sodium carbonate solution. **Neutralization reactions:** 2. Estimation of hydrochloric acid using standard sodium carbonate solution. 3. Estimation of sulphuric acid using standard sodium carbonate	23

	solution.	
	4. Estimation of hydrochloric acid using standard sodium hydroxide solution.	
	5. Estimation of sulphuric acid using standard sodium hydroxide solution.	
II	**Redox reactions:** 1. Estimation of Mohr's salt solution using standard potassium permanganate solution. 2. Estimation of oxalate solution using standard potassium permanganate solution. **Demonstration experiments:** **3.** Determination of melting point of some solids (Urea, Salicylic acid). 4. Determination of boiling point of some solvents (Acetone, Amylalcohol, Benzene). 5. Experiment to show that both air and water required for rusting of iron. 6. Electrolysis of aq.NaCl solution. 7. Reverse Osmosis.	22

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
DPEL101EST	**BASIC ELECTRICAL ENGINEERING**	1

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3 L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation:70
Instruction Mode: Theory	Exam Duration : 3 Hours

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	**DC MOTORS & TRANSFORMERS** **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	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	S. K. Bhattacharya "Electrical Machines"– Tata McGrew 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	**Scheme of Examination**

Total Duration :45 Hrs

Periods / Week: 1+2-T+P

Credits: 2

Instruction Mode: Tutorial + Practical

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 McGrew 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	**Scheme of Examination**

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

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 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	Scheme of Examination

Total Duration : 45 Hrs	Maximum Score : 50
Periods / Week: 1+2-T+P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation : 25
Instruction Mode: Tutorial + Practical	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 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.

Unit	Course Content	Instruction Hours
I	**DOS**: Practice on Internal and External commands, Create and use Batch Files; know the usage of WYSIWY Editor. **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. **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.	22

II	**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, **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. **MS Power Point:** Create a power point presentation for a simple technical topic using MS-PowerPoint. **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. **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. Draw Flow Charts using Raptor Software.		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	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
DPCE101ESP	**ENGINEERING GRAPHICS LAB- I**	1

Scheme of Instruction	**Scheme of Examination**

Total Duration : 45 Hrs   Maximum Score : 50
Periods / Week: 1+2-T+P   Internal Evaluation : 25
Credits:2   End/ External Evaluation : 25
Instruction Mode: Lecture + Practical   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	**Scheme of Examination**
Total Duration : 30 Hrs	Maximum Score : 50
Periods / Week: 2-L	Internal Evaluation : 15
Credits: 2	End/ External Evaluation : 35
Instruction Mode: Lecture	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	**Scheme of Examination**

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

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 Pllai**.**
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	**Scheme of Examination**

Total Duration : 45 Hrs   Maximum Score : 100
Periods / Week: 3-L   Internal Evaluation : 30
Credits: 3   End/ External Evaluation : 70
Instruction Mode: Theory   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	**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. **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.	15
II	**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	15

	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. **MAGNETISM** 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.	
III	**MODERN PHYSICS** 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	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 & 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	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 50
Periods / Week: 1+2-T+P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation : 25
Instruction Mode: Tutorial + Practical	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 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.	22
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.	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	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	Scheme of Examination

Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation : 70
Instruction Mode: Lecture	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	**POLYMERS AND ADVERSE EFFECTS OF COMMONLY USED CHEMICALS** **a. POLYMERS** 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.	15

	6. Elastomers: Butyl rubber, Buna-s, Neoprene rubber and their uses. **b. CHEMICALS IN DAILY LIFE** 1. Chemicals in Medicines: Analgesics, Disinfectants, Antibiotics, Antacids. 2. Chemicals in Food: Preservatives, Artificial Sweetening Agents, Elementary idea of Antioxidants. 3. Cleansing agents: Soaps and Detergents, Cleansing Action of soap.	
II	**METALLURGY AND THE CHEMICAL RESOURSES OF ENERGY** **a. METALLURGY:** 1. General Introduction of Metallurgy: Characteristics of metals and distinction between metals and non metals. 2. Terms and terminologies-mineral, ore, gangue, flux, slag. 3. Types of furnaces: Blast furnace, Reveberatory furnace and Muffle furnace. 4. Concentration of ore: Methods of concentration of ore-froth flotation process. 5. Methods of extraction of crude metal: Roasting, calcination, smelting. 6. Alloys: composition and uses of Brass, German silver and Nichrome. **b. FUELS** 1. General Introduction of fuels 2. Definition and classification of fuels. Characteristics of good fuel. 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	15
III	**ENVIRONMENTAL STUDIES AND WATER TECHNOLOGY** **a. ENVIRONMENTAL STUDIES** 1. General introduction to environmental studies. 2. Environment, scope and importance of environmental studies 3. Important terms and terminology in Environmental Chemistry – renewable and non renewable energy sources. 4. Concept of ecosystem, producers, consumers and decomposers 5. Biodiversity, definition and threats to Biodiversity. 6. Air pollution – Causes and Effects; acid rain; green house effect and global warming; Ozone depletion. Control measures of air pollution 7. Water pollution –Causes and effects. Control measures of water pollution. **b. WATER TECHNOLOGY** 1. General Introduction to Water Technology. 2. Sources of Water; Soft and Hard Water; Causes of Hardness of water. 3. Types of hardness. Disadvantages of Hard Water. Degrees of hardness. Numerical problems related to degree of hardness. 4. Softening of Water-Permutit process and ion exchange process. 5. Drinking water & its qualities. Municipal treatment of water for drinking purpose. Osmosis, Reverse Osmosi. Advantages of Reverse osmosis and its applications.	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	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 50
Periods / Week: 1+2-T+P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation : 25
Instruction Mode: Tutorial + Practical	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	1. Determination of Total Hardness of Water Sample. 2. Determination of Acidity of Water Sample. 3. Determination of Alkalinity of Water Sample. 4. Estimation of Chloride present in Water Sample. 5. Estimation of Dissolved Oxygen in Water Sample.	22
II	**Demonstration Experiments:** **1.** Determination of pH of Water using pH meter. 2. Determination of Turbidity of Water Sample. 3. Estimation of Total Solids Present in Water Sample. 4. Determination of Conductivity of Water. 5. Removal of hardness of water by using Chromatographic method. 6. Determination of high volume Air Sample 7. 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	**Scheme of Examination**

Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 2	End/ External Evaluation : 70
Instruction Mode: Lecture	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	**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. **Rectifiers:** Half wave rectifier, Full wave rectifier, (Bridge & centre tapped) and their characteristics **Filters:** Types of filters, operation, their characteristics and comparison, limitations & advantages of filters	15
III	**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.	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	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 50
Periods / Week: 1+2-T+P	Internal Evaluation : 25
Credits: 3	End/ External Evaluation : 25
Instruction Mode: Tutorial + Practical	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	**Scheme of Examination**

Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation : 70
Instruction Mode: Lecture	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	**Programming constructs** **Sequential structure:** Various types of data, Arithmetic operators, Assignment statement , Assignment operators , printf, scanf, Type conversion techniques ,Macro define **Selective Structure:** Relational operators - Logical operators - Logical expressions - Conditional operator – bit wise operators -Conditional statements - Multi way condition statement - Switch statement **Repetitive structures:** Iterative loops, Nesting, break, continue statements null statement, comma operator.	15
II	**Arrays, Strings and Functions** **Array -** Array declaration - Access to array elements - Initialization of Array elements and - Arrays as arguments	15

	String – Declaration of Strings – various String Functions. **Function-** Return statement – Function prototypes - local and external variables – Automatic and static variables, Recursion.	
III	**Pointers** 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. **Structures and Unions** 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 **File processing and Pre processor directives**- File processing facility - Pre processor directives.	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. 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	**Scheme of Examination**

Total Duration : 45 Hrs

Periods / Week: 1+2-T+P

Credits: 2

Instruction Mode: Tutorial + Practical

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	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 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	1. Write a C program to find the sum of individual digits of a positive integer.	23

2. Write a C program that uses functions to perform the following: 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.	

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	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	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 50
Periods / Week: 1+2-L+P	Internal Evaluation : 25
Credits: 3	End/ External Evaluation : 25
Instruction Mode: Lecture + Practical	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 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.	23
II	1. Auxiliary view 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.	22
Text Books and References:		
1	**First Year Engineering Drawing** – B.R. Gupta.	
2	**Engineering Drawing** by N.D.Bhatt.	

Course Code	Course Title	Semester
DPCC301BST	**ENGENIERING MATHEMATICS-III**	3

Scheme of Instruction

Scheme of Examination

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

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

Course Objectives:

  To Introduce:
- The concept of measures of dispersions.
- The concept of probability and events.
- The concept of random experiment and Baye's theorem.
- Properties of straight lines, circles and conic sections

Course Outcomes:

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

- Solve some related problems on basic probability.
- Solve simple related problems to random experiments and events.
- To proof the basic theorem of probability and related problems.
- Solve simple problems related to straight lines, circles, ellipse, parabola and hyperbola.

Unit	Course Content	Instruction Hours
I	**PROBABILITY:** Random Experiments and Events, Classical Definition of probability, and Addition Multiplication Theorem of Probability. Independent and Dependent Events Conditional Probability, Baye'sTheorem with some Example.	15
II	**MEASURES OF DISPERSION:** Range, Mean Deviation, Variance and Standard Deviation of Ungrouped / Grouped data. Coefficients of Variation and Analysis of Frequency Distribution with Equal Mean but Different Variance.	15
III	**ANALYTICAL GEOMETRY** Straight Line-Different form of a straight lines, distance of a point from a straight line, acute angle between two lines, intersection of two nonparallel lines and distance between two parallel lines. Circles-Equation of a circle given centre and radius, given ends of diameter-General equation finding centre and radius, given end of the diameter-General equation finding the Centre and Radius. Standard forms of equations of Parabola, Ellipse and Hyperbola-Simple properties.	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	**Probability and Statistics** by DR. T.K.V IYENGAR, DR. B.K. KRISHNA GANDHI, S.RANGANATHAN, M.V.S.S.N PRASAD
2	**A Text book of intermediate Mathematics –II** by Telugu Academy
3	**Senior Secondary School Mathematics For 11 & 12** by R.S Aggarwal
4	**Probability and Statistics** by S. Chand&**Text book of Engineering Mathematics** –I by Radiant Publishers

Course Code	Course Title	Semester
DPCS301PCT	**DATABASE MANAGEMENT SYSTEMS**	3

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 **Concept of DBMS**
- Implementation of Entities and entity sets.
- Benefits of SQL & PL/SQL.

Course Outcomes:

- Students will for the students to continue their zeal in research in computer field.

Unit	Course Content	Instruc tion Hours
I	**Concept of DBMS** Purpose of Database systems – data Abstraction – Data Models – Instances and schemes – Data independence – DDL- DML – Data base manager – Data base Administrator - Database users – Overall system structure. Entities and entity sets – Relationships and Relationship sets – mapping constraints – Entity – Relationship Diagram – Reducing E- R Diagrams to tables – Normal forms 1st, 2nd, 3rd and BCNF- EFCODD rules for RDBMS	15
II	**Concept of SQL** Benefits of SQL – Embedded SQL – Number – Data types – Character data types – Number data type – Long data type – Data type Raw and long raw data types – Nulls –Pseudo columns – comments within SQL statements – Operators – Unary and Binary operators – Precedence- Arithmetic operators – character operators – comparison operators – logical operators- se operators – other operators – SQL types of functions– date format models .SQL commands DDL,DML,TCL - Subqueries - Joins .	15
III	**Schema objects** Guidelines for Managing schema objects - creating tables – alter tables –	15

dropping tables – managing sequences – creating sequence – altering sequences- dropping sequences – managing synonyms – creating synonyms – dropping synonyms – managing indexes – guidelines for managing indexes – calculating space for indexes – creating indexes – indexed tables, and cluster indexes –creating clusters, clustered tables, and cluster indexes – for – clustered tables and cluster indexes – Altering clusters– Dropping clusters, clustered tables, and cluster indexes – creating views – managing integrity constraints.

Elements of PL/SQL

a) Main features – architecture – advantage of PL/SQL – fundamentals – Data types – data type conversion – declarations – naming conventions – scope and visibility – assignments – expressions and comparisons– PL/SQL tables – user defined records.
b) Conditional control IF statement and NULL statements.
c) Cursor management – transaction processing – database triggers.
d) Advantages of exceptions – predefined exceptions – user defined exceptions.
e) Procedures – Functions RETURN statement – forward declarations– stored procedures.
f) Database triggers

Advanced PL/SQL
a) Advantages of packages –package specification –package body – overloading – calling packaged subprograms.

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	Understanding ORACLE	- James T. Peary & Joseph G. Laseer.
2	RDBMS with ORACLE	- Rolland.
3	ORACLE series books of ORACLE Press	– TMH.
4	Starting out with Oracle – Covering Databases	-- John Day & CraigVan
5	SQL, PL/SQL, Developer Tools & DBA	Slyke, Dreamtech Press

Course Code	Course Title	Semester
DPCS301PCP	**DATABASE MANAGEMENT SYSTEMS LAB**	3

Scheme of Instruction	Scheme of Examination
Total Duration : 45Hrs	Maximum Score : 50
Periods / Week: 1+2-T+P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation : 25
Instruction Mode: Tutorial + Practical	Exam Duration : 3 Hours

Course Objective:

➢ To understand the basic concepts and the applications of database systems.
➢ To master the basics of SQL and construct queries using SQL.
➢ To understand the relational database design principles.

Course Outcome:
➢ To become familiar with the basic issues of transaction processing and concurrency control.
➢ To become familiar with database storage structures and access techniques.

Unit	Course Content	Instruction Hours
I	1 Know installation of Oracle 2 Exercise on creating tables, inserting records, updating records, modifying the structure of the table & Select Command. 3 Exercise on querying the table using clauses like WHERE, ORDER, IN, AND, OR, NOT 4 Exercise on creating and deleting of indexes 5 Exercise on various group functions like Number functions, character functions, conversion functions and date functions 6 Exercise on set operators	22
II	1 Exercise on sub queries 2 Exercise on Joins, date and number format models 3 Exercise on Sequences, synonyms, views 4 Exercise on creating tables with integrity constraints 5 Write programs using PL/SQL control statements, Cursors and exception handling 6 Exercise on Procedures, Functions, Recursion, Triggers, Packages	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	ORACLE series books of ORACLE Press – TMH.
2	SQL, PL/SQL, Developer Tools & DBA Slyke, Dreamtech Press

Course Code	Course Title	Semester
DPCS301EST	**DIGITAL ELECTRONICS AND COMPUTER ARCHITECTURE**	3

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation : 70
Instruction Mode: Lecture	Exam Duration : 3 Hours

Course Objectives:

- To learn about the Digital System techniques.
- To learn about how to design and implement various digital circuits (Combinational & Sequential).
- To acquire the basic knowledge of computer organization, foundation for the Computer architecture and microprocessor.

Course Outcomes:

On completion of course, the students will able to:

- Simplify and draw logical circuits using Boolean algebra and K-maps.
- Assemble, design, test and troubleshoot logical circuits like:- MUX, DEMUX, COUNTERS, REGISTERS.
- Understands the computer organization & architecture and its functions like memory & I/O organization.

Unit	Course Content	Instruction Hours
I	**Logic Gates, Boolean algebra, Combinational Circuits & Number System:** AND, OR, NOT, EX-OR, EX-NOR, NAND & NOR gates. Boolean theorems, Simplifications of Boolean expressions, De-Morgan's theorems. Logic expressions SOP & POS, Karnaugh's mapping (up to 4-variables). Combinational logic circuits: Adder, Subtractor, Parallel adder/Subtractor circuits. Multiplexers, Demultiplexers, Decoder & Encoder and Digital Comparators. Number System: Binary, Octal, Decimal, Hexadecimal number system, Conversion of number systems, 1's complement and 2's complement, Binary arithmetic, BCD code, BCD arithmetic	15
II	**Flip Flops and Sequential Circuits**: Basic principles of Flip Flop operation of RS, T, D, JK and Master Slave JK flip flop. **Counters & Registers:** Basic Asynchronous, Synchronous Binary and Decade counter and the Ripple counter, their use Decade counter, Up and Down counters,	15

	Ring counter.	
	Shift registers, SISO, SIPO, PISO, PIPO & Universal shift registers, Applications.	
III	**Computer Organisation :-**Functional block diagram of a simple accumulator based CPU, Instruction format and Addressing modes. Memory Organization: Memory hierarchy in a computer, Various memory devices – Characteristics of various memory devices – Associative memory – virtual memory organization, Cache memory & Memory interleaving. I/O Organization**:** Interface, methods of data transfer, Programmed I/O, DMA and priority interrupt, computer with I/O processor & Bus organization.	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	Digital principles and applications
2	Digital Electronics
3	Modern Digital Electronics
4	Computer System Architecture
5	Structured Computer Organization
6	Computer Organization
7	Computer Organization & Architecture--

Course Code **DPEL302PCP**	Course Title **DIGITAL ELECTRONICS LAB**	Semester **3**

Scheme of Instruction

Total Duration : 45 Hrs

Periods / Week: 1+2-T+P

Credits: 2

Instruction Mode: Tutorial + Practical

Duration: 3 Hours

Scheme of Examination

Maximum Score : 50

Internal Evaluation: 25

End/ External Evaluation: 25

Exam

Course Objectives:

➢ To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits.

➢ To impart the knowledge to perform the analysis and design of various digital electronic circuits.

Course Outcomes:

➢ Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.

➢ The ability to analyze and design various combinational and sequential circuits.

Cycle	Course Content	Instruction Hours
I	1.Verification of truth tables of basic logic gates (AND,OR,NOT,EX-OR,EX-NOR) 2.Verification of truth tables of Universal gates (NAND & NOR) 3.Realization of basic gates (AND, OR & NOT) using NAND or NOR gates 4. Construct the circuits of Half-Adder and verify their function. 5.Construct the circuits of Full-Adder and verify their function 6.Verification of Demorgan's laws using gates.	22
II	1.Construct the circuits of Half-Subtractor and verify their function 2. Construct the circuits of Full-Subtractor and verify their function 3. Verify the truth tables of RS & JK Flip Flop 4. Verify the truth tables of T & D Flip Flop 5. To study the functioning of Encoder & Decoder 6.To study the functioning of Multiplexer&Demultiplexer	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	John F.Wakerly, "Digital Design", Fourth Edition, Pearson/PHI, 2008
2	John.M Yarbrough, "Digital Logic Applications and Design", Thomson Learning, 2006.
3	Charles H.Roth. "Fundamentals of Logic Design", 6th Edition, Thomson Learning, 2013

Course Code	Course Title	Semester
DPCS302PCT	**COMPUTER HARDWARE & NETWORKING**	3

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation : 70
Instruction Mode: Lecture	Exam Duration : 3 Hours

Course Objectives:

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

➢ To understand the basic concept and working principles of Computers hardware's

➢ To understand the different topologies,

Course Outcome:

➢ Ability to prepare and estimate approximate cost and materials required for a network

➢ Skill to prepare different wires and test LANs and trouble shoot networking devices

   and solve the problem.

➢ Ability to provide correct power backup to the computer hardware devices.

Unit	Course Content	Instruction Hours
I	PC Hardware and Software Components- Hardware used for I/P, O/P & inside computer case. System board components used for communication among devices-Types of Software (ROM BIOS, OS, and Application Software)- Functions of BIOS- The boot process POST and important beep codes, Know about different connectors.	15
II	**System Board-** Types of system boards, Various Types of Buses, The CPU & the chipset – CPU form factor, CPU slots and sockets- Different types of RAM, Buses(ISA, MCA, EISA, USB, Firewire, AGP,PCI)- Setting the CPU, CMOS setup and data protection. Troubleshooting hard drives & data recovery- Optimizing Hard drive – disk cleanup, disk fragmentation. disk backup.Bootable rescue disk, diagnostic software's, viruses, detection software, Anti-Static tools, How to isolate computer problems, Surge protection & battery backup Stand by UPS, Inline UPS, Line-interactive UPS, intelligent UPS.	15

III	Introduction to Networks and Topologies, Classification of Networks – LAN,MAN,WAN-OSI Reference Model- TCP/IP Reference Model- Basic Topologies such as Bus, Ring, Star and Hybrid- Network Addressing, LAN Cables and Connectors, wireless network adapter, Coaxial Cables, Twisted-Pair Cables, Optical Fiber Cables, and Connectors- LAN Devices-repeaters, Hubs, Switches, Network Interface Cards (NICs), Routers, Modem, Introduction to Network Addressing, IP Address Classes, IP Subnetting.	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	Enhanced Guide to Managing And Maintaining Your PC --Jean Andrews (Thomson)		
2	Basics of Networking	--	NIIT PHI publication
3	PC Hardware A Beginners Guide	--	Gilster (TMH)
4	Trouble Shooting Your PC	--	Stone & poor
5	Computer Installation & Servicing	--	D. Balasubramaniam

Course Code	Course Title	Semester
DPCS302PCP	**COMPUTER HARDWARE & NETWORKING LAB**	3

Scheme of Instruction	Scheme of Examination

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

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 understand the basic concept and working principles of Computers hardware

➢ To understand the different topologies,

Course Outcome:

➢ Ability to prepare and estimate approximate cost and materials required for a network

➢ Skill to prepare different wires and test LANs and trouble shoot networking devices

  and solve the problem.

➢ Ability to provide correct power backup to the computer hardware devices.

Unit	Course Content	Instruction Hours
I	1. Identify motherboard components**,** RAM identification, removal, installation. 2. CMOS setup, Print a summary of your system Hardware, Upgrading memory. 3. Hard drive, optical drive installation**.** 4.Trouble shooting keyboard ,monitor, printer 5. Printer Problems: laser printer> a) Printer never leaves warm-up mode. b) Paper Jam message is displayed. c) Printed messages are distorted	22

	6. Installation of operating system**.**	
II	1. Installation of Network card. 2. Preparing the UTP cable for cross and direct connections using crimping tool. 3. Installation of a switch,Router and connecting systems to a network switch. 4. Installation of a modem (internal, external or USB) and connecting to internet. 5. Using FTP for uploading and downloading files. 6. Installation and configuring the proxy server for internet access.	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	Enhanced Guide to Managing And Maintaining Your PC --Jean Andrews (Thomson)
2	Basics of Networking -- NIIT PHI publication
3	PC Hardware A Beginners Guide -- Gilster (TMH)
4	Trouble Shooting Your PC -- Stone & poor

Course Code	Course Title	Semester
DPCS303PCT	**DATA STRUCRURES THROUGH C**	3

Scheme of Instruction	**Scheme of Examination**

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

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 Linear and non linear, Singly linked lists, Doubly linked lists in Data Structures.
- ☐ Implementation of stacks and Queues.
- ☐ Trees Representation in programming.
- ☐ Understand the Searching and Sorting techniques.

Course Outcomes:
- ☐ Students will understand the data structures and its implementation in programming language.

- ☐ It gives an opportunity to students to continue their zeal in research in computer field.

Unit	Course Contents	Instruction Hours
1.	**Introduction to data structures** Data structures – Linear and non linear, data types and abstract data types, algorithm analysis for time and space requirements. **Linked List- Definition ,** Singly linked lists – Create, insert, delete, sort, search and replace an element in a linked list – Reverse, Create singly circular linked list. **Doubly linked list** – Create, insert, delete elements in doubly linked list - Create doubly linked circular list.	15
2	**Queues and stacks** Implementation of stacks, application of stacks, converting infix to postfix expression and evaluation Applications and Implementation of queues, Circular queues, Priority queue. Sparse matrix representation	15
3	**Non Linear Data Structures Trees** Trees –Binary trees – Linear representation – Linked list	15

representation, tree traversals, Tree Conversion and Applications

Sorting and Searching
Introduction to different sorting techniques – selection, insertion, bubble, quick and merge. Introduction to different searching techniques – sequential and binary.

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	Data Structures: A Pseudocode Approach with C - Gilberg / Forouzan
2	Data Structures using _C' - Tanenbaum langsam and Augonstein (PHI).
3	Data structures through C- Yashwanth Kanetkar
4	An Introduction to data structures with applications- Tremblay and Sorenson

Course Code	Course Title	Semester
DPCS303PCP	**DATA STRUCRURES THROUGH C LAB**	3

Scheme of Instruction	Scheme of Examination

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

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

Course Objective:
On completion of the study of the subject the student should be able to comprehend the following:
➢ To understand the basic concept and working principles of Data Structures
➢ To understand the usage of structures in C

Course Outcome:
➢ Ability to write a code using data structures.

Cycle	Course Content	Instruction Hours
I	1. Exercises on creation, insertion, deletions and display of elements in a singly linked lists 2. Exercises on creation, insertion, deletions and display of elements in a doubly linked lists 3. Write a program to Implement a stack 4. Write a program to implement a queue 5. Write a program to create a sparse matrix 6. Write a program to create a binary tree and its traversal operations	22
II	1. Exercise on Selection sort 2. Exercise on insertion sort 3. Exercise on bubble sort 4. Implement a program for merge sort on two sorted lists of elements 5. Exercises on linear search 6. Exercise on binary search	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	Enhanced Guide to Managing And Maintaining Your PC --Jean Andrews (Thomson)
2	Basics of Networking -- NIIT PHI publication
3	PC Hardware A Beginners Guide -- Gilster (TMH)
4	Trouble Shooting Your PC -- Stone & poor

Course Code	**Course Title**	**Semester**
DPCC301SEP	**BASIC COMMUNICATION & PRESENTATION SKILLS LAB**	3

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 50
Periods / Week: 1T+2P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation:25
Instruction Mode: Tutorial + Practical	Exam Duration : 3 Hours

Course Objectives:

The course enables the students to:

- Listen and understand English
- Describe objects and report incidents
- Make short oral presentations

Course Outcomes:

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

- Use English for short conversations
- Introduce themselves
- Talk about objects, incidents etc.

Cycle	Course Content	Instruction Hours
I	1. Listening – I 2. Introducing oneself 3. Describing objects	22
II	1. Reporting past incidents 2. Just a minute 3. Making presentations	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.		

Course Code	Course Title	Semester
DPCS401PCT	**SYSTEM ADMINISTRATION**	4

Scheme of Instruction	**Scheme of Examination**

Total Duration : 45 Hrs   Maximum Score : 100
Periods / Week: 3-L   Internal Evaluation : 30
Credits: 3   End/ External Evaluation : 70
Instruction Mode: Lecture   Exam Duration : 3 Hours

Course Objective:

- To understand the working of windows server operating system
- To understand the installingandconfiguringvariousservicesofwindows2008OS
- To understand Linux operating system and Administration

Course Outcome:
- The skills to apply the concepts in maintaining windows operating system
- Ability to maintain the Linux operating system

Unit	Course Contents	Instruction Hours
1.	**Introduction to Windows NT:** NT Server, WorkStation Architecture, NT Services-File system conversion FAT to NTFS, Windows 2008 Server Environment Need for Windows 2008, Comparison between NT and windows 2008, Server Components, Hardware requirements, Optional services.	15
2	Windows 2008 Server Management Installation & Configuration of Windows 2008 Server, User group Management, Disk Management, Active Directory, Distributed File system, Remote Terminal Services, Networking with Windows 2008 Server, Domain Name system(DNS), DHCP, Installation of IIS, VPN, Restoring, Domain Security.	15
3	Introduction to LINUX Installation of LINUX, Desktop Environment, Linux editors and commands, filtering techniques. LINUX Administration Managing users and groups, managing printers, configuring DHCP, DNS, Network services, Firewalls, Security, backup.	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	Windows NT server -- MCSguide,Sybex	
2	Sams'TeachYourselfMCSTCP/IP. --JamesF.Causey,Techmedia	
3	UNIX & Shell Programming --ForouzanThomson	
4	Introduction to UNIX and LINUX -- JohnMuster,TMH. Pubs	

Course Code	Course Title	Semester
DPCS401PCP	**SYSTEM ADMINISTRATION LAB**	4

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45Hrs	Maximum Score : 50
Periods / Week: 1+2-T+P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation : 25
Instruction Mode: Tutorial + Practical	Exam Duration : 3 Hours

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

➢ Installing, configuring and implementing a Windows Server 2008.
➢ Implementing and administering Active Directory Domain Services
➢ To understand installing Linux operating system.
➢ Create Users and Groups in LINUX system, Configure the Local Printer & Configure the Print Server.

Course Outcome:

➢ Ability to configure windows 2008 Server and its Services.
➢ Ability to administrate the System & network environment in an organization.
➢ Install, configure, and troubleshoot a Linux Operating System on a PC.

Cycle	Course Content	Instruction Hours
I	1. Installation of windows 2008 server. 2.Adding client system in to domain 3. Create Users and Groups in Windows 2008 server. 4. Installation of and configuration of IIS. 5. Installation and Configuration DHCP. 6. Installation and Configuration DNS.	22
II	1. Installation of LINUX, Practice popular Linux commands. 2. Create Users and Groups in LINUX system. 3. Configure the Local Printer. 4. Configure the Print Server. 5. Configure the Remote printer. 6. Configuring DHCP and DNS.	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	Windows NT server -- MCSguide,Sybex	
2	Sams'TeachYourselfMCSTCP/IP. --JamesF.Causey,Techmedia	
3	UNIX & Shell Programming --ForouzanThomson	
4	Introduction to UNIX and LINUX -- JohnMuster,TMH. Pubs	

Course Code	Course Title	Semester
DPCS402PCT	**MICROPROCESSORS & INTERFACING**	4

Scheme of Instruction	**Scheme of Examination**

Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation : 70
Instruction Mode: Lecture	Exam Duration : 3 Hours

Course Objectives:

1. To develop the skill & knowledge of Computer's Internal Operation and Design.
2. To investigate the programmer's model of a microprocessor, appreciate methods of connecting common peripheral devices, and understand the ways in which microprocessors can be used in automated systems.

Course Outcomes:

1. The objective of this course is to provide extensive knowledge of microprocessor based systems and interfacing techniques.
2. Identify/explain the operation of the components of a typical microprocessor; the role of ALU, registers, stack and the use of interrupts.
3. Appreciate the link between the compiler, linker, assembler, emulator and debugger, and understand their roles in the development of software for microprocessor systems,
4. Gain hands-on experience in interfacing peripherals.

Unit	Course Content	Instruction Hours
I	An overview of 8085-Architecture of 8086 Microprocessor-Special functions of General purpose registers-8086 flag register and function of 8086 Flags-Addressing modes of 8086- Instruction set of 8086-Assembler directives.	15
II	Assembly language programs involving logical-Branch & Call instructions- sorting- evaluation of arithmetic expressions-string manipulation. Pin diagram of 8086-Minimum mode and maximum mode of operation- Memory interfacing to 8086 (Static RAM & EPROM) - Need for DMA- DMA data transfer Method- Interfacing with 8237/8257.	15
III	8255 PPI – various modes of operation and interfacing to 8086-Interfacing Keyboard, Displays, 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance. Serial data transfer schemes. Asynchronous and Synchronous data transfer schemes. 8251USART architecture and interfacing.	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	Advanced microprocessor and Peripherals - A.K.Ray and K.M.Bhurchandi, TMH, 2000.
2	Micro Processors & Interfacing – Douglas U. Hall, 2007.
3	The 8088 and 8086 Micro Processors – PHI, 4th Edition, 2003.
4	Micro Computer System 8086/8088 Family Architecture, Programming and Design - By Liu and GA Gibson, PHI, 2nd Ed.,

Course Code	Course Title	Semester
DPCS402PCP	**MICROPROCESSORS & INTERFACING LAB**	4

Scheme of Instruction	**Scheme of Examination**

Scheme of Instruction
Total Duration : 45Hrs
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:

1. To Implement and Design Microprocessors Interfacing with 8086

2. To investigate the programmer's model of a microprocessor, appreciate methods of connecting common peripheral devices, and understand the ways in which microprocessors can be used in automated systems.

Course Outcome:

➢ The objective of this course is to provide hands-on programming with microprocessor using simulation software.

➢ Appreciate the link between the compiler, linker, assembler, emulator and debugger, and understand their roles in the development of software for microprocessor systems.

Cycle	Course Content	Instruction Hours
I	1. Write an assembly language program to add two numbers of 16-bit data 2. Write an assembly language program to subtract two numbers of 16-bit data 3. Write an assembly language program to add two numbers of BCD data 4. Write an assembly language program to multiply two numbers of 16-bit data 5. Write an assembly language program to divide 16-bit number with 8-bit number. 6. Write an assembly language program to search the largest number in an array 7. Write an assembly language program to sort the numbers in an array 8. Write an assembly language program to find LCM of two 16-bit data 9. Write an assembly language program for factorial of a number. 10. Write an assembly language program for generating Fibonacci series.	22

II	1. Write an assembly language program to search for a given pattern in a string 2. Write an assembly language program to reverse of a string 3. Write an assembly language program to display a message. 4. Write an assembly language program to move data from one location to another location. 5. Write a program for generating multiplication table for a given number 6. Write an assembly language program to count number of ones and zeros in a 8-bit number. 7. Write an Assembly language programs for keyboard and Display controller with 8279	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	Advanced microprocessor and Peripherals - A.K.Ray and K.M.Bhurchandi, TMH, 2000.
2	Micro Processors & Interfacing – Douglas U. Hall, 2007.
3	The 8088 and 8086 Micro Processors – PHI, 4th Edition, 2003.
4	Micro Computer System 8086/8088 Family Architecture, Programming and Design - By Liu and GA Gibson, PHI, 2nd Ed.,

Course Code	Course Title	Semester
DPCS403PCT	**WEB DESIGNING**	4

Scheme of Instruction	Scheme of Examination

Total Duration : 45 Hrs   Maximum Score : 100
Periods / Week: 3-L   Internal Evaluation : 30
Credits: 3   End/ External Evaluation : 70
Instruction Mode: Lecture   Exam Duration : 3 Hours

Course Objectives:

1. To develop the skill and knowledge of Web page design.

2. Students will understand the knowhow and can function either as an entrepreneur or can take up jobs in the multimedia and Web site development studio and other information technology sectors.

Course Outcomes:

The student will be able to

- ➢ Define the principle of Web page design
- ➢ Define the basics in web design
- ➢ Visualize the basic concept of HTML.
- ➢ Recognize the elements of HTML.
- ➢ Introduce basics concept of CSS.
- ➢ Develop the concept of web publishing

Unit	Course Content	Instruction Hours
I	Web Design Principles, Basic principles involved in developing a web site, Planning process, Five Golden rules of web designing, Designing navigation bar, Page design, Home Page Layout, Design Concept. Basics in Web Design, Brief History of Internet, What is World Wide Web, Why create a web site, Web Standards, Audience requirement. Introduction to HTML, What is HTML, HTML Documents, Basic structure of an HTML document, Creating a HTML document, Mark up Tags, Heading-Paragraphs, Line Breaks, HTML Tags, Introduction to elements of HTML, Working with Text.	15
II	**HTML:** Working with Lists, Tables and Frames, Working with Hyperlinks, Images and Multimedia, Working with Forms and controls. **Introduction to Cascading Style Sheets**, Creating Style Sheet, CSS Properties, CSS Styling (Background, Text Format, Controlling Fonts), Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, Box Model(Introduction, Border properties, Padding,	15

	Properties, Margin properties), CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector), CSS Color, Creating page Layout and Site Designs.	
III	Introduction to PHP-arrays-functions-strings-object orientation in PHP- Working with forms– File manipulations in PHP- saving state in PHP- advanced concepts in PHP-PHP and connectivity to database.	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	HTML 5 in simple steps Dreamtech Press, Kogent Learning Solutions Inc.
2	A beginner's guide to HTML NCSA,14th May,2003
3	Murray,Tom/Lynchburg Creating a Web Page and Web Site College,2002
4	PHP: A beginners guide- Vikram Vaswani
5	The joy of php a beginner's guide to programming interactive web applications with php and mysql

Course Code	Course Title	Semester
DPCS403PCP	**WEB DESIGNING LAB**	4

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45Hrs	Maximum Score : 50
Periods / Week: 1+2-T+P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation : 25
Instruction Mode: Tutorial + Practical	Exam Duration : 3 Hours

Course Objectives:

1. To develop the skill and knowledge of Web page design.

2. Students will understand the knowhow and can function either as an entrepreneur or can take up jobs in the multimedia and Web site development studio and other information technology sectors.

Course Outcomes:

The student will be able to
- ➢ Define the principle of Web page design
- ➢ Define the basics in web design
- ➢ Visualize the basic concept of HTML.
- ➢ Recognize the elements of HTML.
- ➢ Introduce basics concept of CSS.
- ➢ Develop the concept of web publishing

Cycle	Course Content	Instruction Hours
I	1. Acquaintance with elements, Tags and basic structure of HTML files. 2. Practicing basic and advanced text formatting. 3. Practicing use of multimedia components (Image, Video and Sound) in HTML document. 4. Designing of webpage-Working with List and tables. 5. Designing of webpage-Working with Frames, Forms and Controls. 6. Acquaintance with creating style sheet, CSS properties and styling. 7. Working with Background, Text and Font properties.	22
II	1. Write PHP code to display date and time. 2. Write PHP code to create a form through which data can be uploaded into automated system. 3. Write PHP code to create a cookie. 4. Write PHP code to create a table and insert records into it. 5. Design your Polytechnic website, install it and maintain it.	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	Web Designing and Architecture-Educational Technology Centre University of Buffalo.
2	Beginning HTML, XHTML, CSS, and JavaScript, John Duckett, Wiley India
3	HTML 5 in simple steps Dreamtech Press, Kogent Learning Solutions Inc.
4	A beginner's guide to HTML NCSA,14th May,2003
5	Murray,Tom/Lynchburg Creating a Web Page and Web Site College,2002
6	PHP: A beginners guide- Vikram Vaswani
7	The joy of php a beginner's guide to programming interactive web applications with php and mysql

Course Code	Course Title	Semester
DPCS404PCT	**OOPS through C++**	4

Scheme of Instruction	**Scheme of Examination**

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

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

Course Objectives:

- To get a clear understanding of object-oriented concepts.
- Learn to write programs using object oriented programming approach in C++ to solve problems.
- To understand object oriented programming through C++.

Course Outcome:

- Gain the basic knowledge on Object Oriented concepts.
- To develop applications using Object Oriented Programming Concepts.
- To implement features of object oriented programming to solve real world problems.

Unit	Course Content	Instruction Hours
I	**Introduction to OOP:** OO Paradigm-Features of Object oriented Programming- Structured Oriented Vs Object Oriented Development- Applications of OOP- Merits and Limitations of OOP- Structure of a C++ program. **Data types:** Basic Data types - Basic Type modifiers- Variables- Declaring &Initializing variables- Operators- I/O Operation- Formatted Console & Unformatted Console and stream I/O Functions.	15
II	**Classes and Objects:** Classes -Class Members and Creating Objects- Member functions- Member Access Specifiers (public, private, protected) - Static class member. **Arrays:** Declaration & Initialization of Arrays, Array of Objects, Functions, Inline Functions, Passing Objects as function arguments and returning object from a function. **Constructors and Destructors:** Constructors- Overloaded Constructors- Null Constructors- Copy Constructor- Destructors Constraints on Constructors and Destructors **Overloading Functions and Operators:** Overloading Functions- Overloading Operators (Unary, binary, string manipulation using operator).	15

III	**Inheritance :** Base and Derived classes- accessing Base class members and Access Control-Types of Inheritance: Single- Multi Level- Multiple- Hierarchical& Hybrid Inheritance- Virtual Base Class **Polymorphism Fundamental of Polymorphism**: Pointer to object and derived class- 'This' pointer, Virtual Functions,-Early and Late Binding,- Rules of Virtual Functions-Pure Virtual Function- Friend Functions, Dynamic Memory allocation in c++. Exception Handling & Templates Introduction to Exception Handling-Exception Specification, Generic Functions/Function Templates, Template Arguments.	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	Robert Lafore, Object Oriented Programming In C++, Fourth Edition, Tech Media, 2002. ISBN 0-672-32308-7
2	OOPs , Balaguruswamy, TMH
3	Stanley B. Lippman, Josee Lajoie, C++ Prime, Third Edition, Pearson Education. ISBN 81- 7808-048-6
4	Bjarne Stroustrup, Programming: Principles and Practice Using C+, Addison Wesley, Pearson Education.

Course Code	Course Title	Semester
DPCS404PCP	**OOPS through C++ Lab**	4

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45Hrs	Maximum Score : 50
Periods / Week: 1+2-T+P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation : 25
Instruction Mode: Tutorial + Practical	Exam Duration : 3 Hours

Course Objectives:

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

➢ To study of C++ concepts.
➢ To write the programs in various concepts in C++ .

Course Outcome:

➢ The course objectives ensure the development of students applied skills in C++.
➢ Students will gain knowledge in writing various concepts of C++.

Cycle	Course Content	Instruction Hours

I	1 Write programs using
	           a) Class definition & object
	           b) Constructor and destructor
	            c) Inline function,
	
	2 Write program to demonstrate the use of operator overloading on unary operator ++ & binary operators like + operator and << operator
	
	 3. Simple programs on array of objects and pointers to objects
	
	4. Simple programs illustrating use of all types of inheritances
	
	5. Program illustrating virtual functions.
		22

II	6. Programs using templates 7. Program using Friend function. 8. Program on virtual base class. 9. Program using on New & Delete operators. 10. Program using on exception handling in c++.	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	Robert Lafore, Object Oriented Programming In C++, Fourth Edition, Tech Media, 2002.	
2	OOPs , Balaguruswamy, TMH	

Course Code	Course Title	Semester
DPCS405PCT	**OPERATING SYSTEMS**	4

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation : 70
Instruction Mode: Lecture	Exam Duration : 3 Hours

Course Objectives:
- To learn about the basics of operating system.
- To learn about the job scheduling and memory management .
- To acquire the knowledge of free space management and file systems

Course outcomes:

On completion of course, the students will able to:
- To learn about the functions of an operating system.
- To learn about the effective utilization of memory management of a system..
- Understands the use of security mechanismsAbility to compare the different OS

Unit	Course Content	Instruction Hours
I	**Introduction to operating system** Introduction – History of operating system – Operating system concepts – Operating system structure – Overview of operating system functions.	15
II	**Process and storage management** Introduction to processor – Job programs – Job scheduling – Process scheduling – Process synchronization – Process communications – Deadlocks. Memory management – Paging – Swapping – Virtual and Cache memory – Page replacement algorithms – Paging system.	15
III	**Secondary storage management and file systems** Disk structure – Free space management – Allocation methods – Scheduling methods – Hierarchy. Introduction to file systems – File system design – File servers – Security – Protection mechanism.	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	Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.
2	Operating systems - Internals and Design Principles, W. Stallings, 6th Edition, Pearson.
3	Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.

Course Code	**Course Title**	**Semester**
DPCC401SEP	**COMMUNICATION &** **INTERACTIVE SKILLS LAB**	4

Scheme of Instruction	**Scheme of Examination**

Total Duration : 45 Hrs — Maximum Score : 50
Periods / Week: 1T+2P — Internal Evaluation : 25
Credits: 2 — End/ External Evaluation:25
Instruction Mode: Tutorial + Practical — Exam Duration : 3 Hours

Course Objectives

The course enables the students to:

- Describe events
- Make observations
- Participate in group discussions
- Practice mock interviews

Course Outcomes

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

- Speak about events
- Infer details from reading materials
- Learn ethics of group discussion and interview

Cycle	**Course Content**	**Instruction Hours**
I	1. Listening – II 2. Describing events 3. Speaking from observation/reading	22
II	1. Group discussions 2. Interview skills 3. Making presentations	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.		

Course Code	Course Title	Semester
DPCC501PET	**INDUSTRIAL MANAGEMENT AND ENTREPRENEURSHIP**	5

Scheme of Instruction	**Scheme of Examination**

Total Duration : 45 Hrs   Maximum Score : 100
Periods / Week: 3-L   Internal Evaluation : 30
Credits: 3   End/ External Evaluation : 70
Instruction Mode: Lecture   Exam Duration : 3 Hours

 Course Objectives:

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

- To provide the necessary knowledge, skills, values and attitudes to occupy positions of management and administration in business, industry, public system and the government.
- To impart the students latest and relevant knowledge from the field of management theory and practice.
- To provide opportunities to the students for developing necessary Production and Materials.
- To develop the right kind of values and ethics to function effectively as Managers/Administrators/entrepreneurs.

Course Outcomes:

- Ability to explain and describe how industrial activities are led and organized.
- An ability to choose, interpret and using Quantitative Techniques as a basis for decision-making in different business cases.
- Ability to compile and interpret the annual reports of an industrial company at a basic level.

Unit	Course Content	Instruction Hours
I	**Introduction to Management** Define industry, commerce (Trade) and business, Definition of Management, Need for management. Nature and Scope of Management, Definitions of Industrial Management, Importance of Management, Functions of management, Purpose of Planning, Steps in planning, Organizational Process, Functions of management, Motivation, Maslow's Need Hierarchy Theory, Communication, Decision Making, Levels of management, Management and administration, F. W. Taylor's Scientific Management Theory, Principles laid by Henry Fayol, **Forms of Organization**: Line/Staff and functional Organizations, Decentralization and Delegation **Business Ownership**: Proprietorship, Partnership, Joint Stock Company, Private limited company, Public Limited company, Co-operative society, Public Sector, Globalization,	15

II	**Production, Material and Maintenance Management** **Production Management:** Identify the factors of Plant Location, Objectives of plant Layout, Explain the types of plant Layouts, Relate the production department with other departments, Explain the stages of Production, planning and control, Demand forecasting using Moving average method, Dispatching, Break Even Analysis, Draw PERT/CPM networks, Identify the critical path **Materials Management**: Role and importance of materials management in industries, Functions of Materials Management, Explain ABC analysis, Define safety stock. Define reorder level, Derive an expression for economic ordering quantity, Functions of Stores Management, Types of store layouts, List out stores records, Bin card, Describe Cardex method, General purchasing procedures, List out purchase records, Applications of RFID in material management **Maintenance Management:** Definition, Importance, Objectives and Activities of maintenance management		15
III	**Industrial Safety, Quality Control and Entrepreneurship Development** **Industrial Safety:** Importance of safety at Work place. List out the Acts governing safety of employees in industry. Different hazards in the Industry. Causes of accidents. Direct and indirect cost of accidents. **Quality Control:** Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - Contributions of Deming, Juran and Crosby, Costs of quality, Quality Management Systems and ISO: Evolution of ISO standards, Beneficiaries of ISO 9000, Concepts of ISO 14000 **Entrepreneurship Development**: Define the word entrepreneur. Explain the requirements of an entrepreneur. Determine the role of entrepreneurs in promoting Small Scale Industries. Describe the details of self-employment schemes. Characteristic of successful entrepreneurs Explain the method of site selection. List out the organisations that help an entrepreneur, Understand the concept of make in India, Zero defect		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	Industrial Engineering and Management -by O.P Khanna
2	Production Management- by Buffa
3	Engineering Economics and Management Science - by Banga & Sharma
4	Personnel Management by Flippo.
5	Production and Operations Management –S.N. Chary
6	Supply Chain Management –Sunil Chopra and Meindl, PHI publishers
7	Total Quality Management by Sidharth Bhatt

Course Code	Course Title	Semester
DPCS501PCT	**JAVA PROGRAMMING**	5

Scheme of Instruction	**Scheme of Examination**

Total Duration : 45 Hrs   Maximum Score : 100
Periods / Week: 3-L   Internal Evaluation : 30
Credits: 3   End/ External Evaluation : 70
Instruction Mode: Lecture   Exam Duration : 3 Hours

Course Objective:
1. To understand the Object Oriented Programming concepts
2. To understand the concurrent programming
3. To understand Graphical User Interface (GUI) programming

Course Outcome:
1. Develop applications using different oops concepts
2. Create GUI applications to solve problems

Unit	Course Content	Instruction Hours
I	**Introduction and Basics of Java:** History of java, byte codes, literals, comments, key words , separators, data types , declaring variable, scope , life time, type conversions, casting, arrays, types of operators, order of precedence of operators, selection statements, control statements, jumping statements, break, continue statements, usage of classes, objects, new, delete, methods, constructors, method overloading, string classes, command line arguments.	15
II	**Inheritance, Packages, Interfaces, Multi Threading And Exception Handling:** Inheritance super class, sub classes, types of inheritance, multi level hierarchy, overriding, concept of packages and Interfaces, importing of packages, implementing Interfaces. Define thread, life cycle of thread, multi threading, inter thread communication, deadlocks, thread properties, Source of errors, error handling, avoiding, handling.	15
III	**Applets And Event Handling: Applets:** concepts applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets. **Event Handling:** events, event sources, event classes, event listeners, delegation event model, handling mouse and keyboard events, adapter classes, the awt class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels, scroll pane, dialogs, menu bar, graphics, layout manager, layout manager types, border, grid, flow and card.	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	The complete reference Java -- Pattrick Naughten, Herbert Schildt TMH company Limited, New Delhi.
2	Java Foundations of Programming – NIIT, PHI 5. Programming with Java -- Balagurusamy, TM
3	Java for Programmers, P.J. Deitel and H.M. Deitel, Pearson education (OR) Java: How to Program P.J. Deitel and H.M. Deitel, PHI.

Course Code	Course Title	Semester
DPCS501PCP	**JAVA PROGRAMMING LAB**	5

Scheme of Instruction	**Scheme of Examination**

Total Duration : 45 Hrs   Maximum Score : 50
Periods / Week: 1T+2P   Internal Evaluation : 25
Credits: 2   End/ External Evaluation:25
Instruction Mode: Tutorial + Practical   Exam Duration : 3 Hours

Course Objective:
1. To understand the Object Oriented Programming concepts

2. To understand the concurrent programming

3. To understand Graphical User Interface (GUI) programming

Course Outcome:
1. Improve programming skills to apply OOP and Java programming in problem solving
2. Ability to implement GUI applications

Cycle	Course Content	Instruction Hours
I	1. Write programs using Java built-in functions using all data types. 2. Write programs using concept of overloading methods. 3. Exercise on inheritance. 4. Write the programs using the concept of super class, overriding methods. 5. Exercise using *final* to avoid overriding. 6. Exercise on importing packages.	22
II	1. Exercise on interfaces. 2. Exercise on exception handling covering the system exceptions and user-defined exceptions. 3. Exercise on multithreading covering thread priorities. 4. Exercise on I/O streams. 5. Exercise on applets. 6. Exercise on event handling in applets.	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	The complete reference Java -- Pattrick Naughten, Herbert Schildt TMH company Limited, New Delhi.	
2	Java Foundations of Programming – NIIT, PHI 5. Programming with Java -- Balagurusamy, TM	
3	Java for Programmers, P.J. Deitel and H.M. Deitel, Pearson education (OR) Java: How to Program P.J. Deitel and H.M. Deitel, PHI.	

Course Code	Course Title	Semester
DPCS502PCT	.NET PROGRAMMING	5

Scheme of Instruction	Scheme of Examination
Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation : 70
Instruction Mode: Lecture	Exam Duration : 3 Hours

Course Objective:

- To understand the .NET Programming concepts.
- To understand the integrated development environment.
- To understand Graphical User Interface (GUI) programming.

Course Outcome:

On completion of course, the students will able to:

- Apply .NET programming concepts in problem solving
- Implement GUI applications.
- Student will able to Develop window Form and Web based Application

Unit	Course Content	Instruction Hours
I	**Introduction to .NET Technology and .NET Programming Fundamental in VB**: What is .NET Framework - Component of .NET – CLR and Library -NET - Understand the Integrated Development Environment, Know about .NET Assemblies- Private & shared assemblies - Benefits of .NET assemblies. NET Programming fundamentals in VB (Console Application): Introduction to Visual Basic.NET - Features of Visual Basic, Variable declaration and types – User defined data types – Scope and life of a variable – Arrays & Constraints, OOP's Concepts, Writing small programs – Control flow statements – Writing programs using control flow statements – Procedures and Functions – Recursion concept in VB.NET - Exception Handling in VB.NET Data accessing in ADO.NET in windows form application.	15
II	**Developing Windows Applications**: Know the Visual Basic .NET working Environment and browse through various menus on the menu bar - Know about the help system – Know how to save debug and distribute VB.NET application – Design aspects of VB.NET forms – Elements of User Interface – Properties of Controls – Text box, Label, command button, check Box and list box – Designing forms and displaying messages using above controls. Common properties	15

	of the above controls – enable , disable controls – control arrays – Menus and common dialogue control – creating menus at design time using menu design window – control menus and runtime - create short cut keys for pull down menus – common dialogue control, -Multiple Document Interface– Fundamentals of graphics in VB – Line and shape control s in creating graphics – paint picture method –Display and printing information fundamentals of printing, printer object – printing with print form method. Data Access with ADO.NET in Windows Form Application.	
III	**Developing Web Application :-** Introduction to Web Forms – Creating buttons, Text boxes, Labels and Literals in Web forms - Creating Place holders, hidden Field Control and Creating Upload - Controls Web forms - Working with Check boxes, Radio buttons, Tables and Panels in Web forms - Know how to use Images, List boxes, Drop-down lists, Hyper links and link buttons in Web Forms. Data Access with ADO.NET **-** Introduction to ADO.NET data objects - Accessing data with Server explorer - Accessing data with data adapters and data sets - Multiple Table Connection - Data binding with controls like Text Boxes, List Boxes, Data grid etc. - Navigating data source - Data Grid View, Data form wizard - Data validation – Connection Objects, Command Objects, Data Adapters, Dataset Class - Features and advantages with ADO.NET.	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	Visual basic.NET Programming Steven Holzner Dream tech
2	VB.NET PROGRAMMING BY T. GADDIS (Dreamtech)
3	Microsoft Visual Basic. Net step by step By Halvosrson (**PHI**)
4	OOP with Microsoft Visual Basic.Net By Reynold Hacrtte (**PHI**)

Course Code	Course Title	Semester
DPCS502PCP	**.NET PROGRAMMING LAB**	5

Scheme of Instruction	**Scheme of Examination**

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

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

Course Objective:
- To understand the .NET Programming concepts.
- To understand the integrated development environment.
- To understand Graphical User Interface (GUI) programming.

Course Outcome:

On completion of course, the students will able to:

- Apply .NET programming concepts in problem solving
- Implement GUI applications.
- Student will able to Develop window Form and Web based Application.

Cycle	Course Content	Instruction Hours

I	1. Write a simple program in VB .NET on
	
	   A. Loop statements and Control flow statements.
	
	   B. Array (Single dimensional & Multi dimensional).
	
	   C. Function, Procedure and Recursive Function.
	
	2. Exercise on windows form designing using Basic Control.
	
	3. Design a small application using Basic Controls and Common Dialog Controls of Windows form Application.
	
	4. Exercise on Menus at design time & runtime.
	
	5. Exercise on Control arrays.
	
	6. Exercise on multiple documents interface, loading and unloading child forms.
	
	7. Exercise on graphics methods & Line and Shape Controls
		22

II	1. Exercise on Printer Object. 2. Exercise on data accessing in ADO.NET in windows form application.	23

	3. Exercise on all web forms Controls (Buttons, Text boxes, Labels, Literals., Check boxes, Radio Buttons, Tables, Images and Hyperlinks 4. Design a Web site using all web form controls. 5. Exercise on data accessing in ADO.NET in Web Application. 6. Exercise on Validations in Web Application.	

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	Visual basic.NET Programming Steven Holzner Dream tech
2	VB.NET PROGRAMMING BY T. GADDIS (Dreamtech)
3	Microsoft Visual Basic. Net step by step By Halvosrson (**PHI**)
4	OOP with Microsoft Visual Basic.Net By Reynold Hacrtte (**PHI**)

Course Code	Course Title	Semester
DPCS503PCP	**COMPUTER ANIMATION LAB**	5

Scheme of Instruction	**Scheme of Examination**

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

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

Course Objectives:

By the end of this course students will have learned:

* The basics of animation timing
* The importance of walk cycles and their basic construction
* The purpose of keeping a sketchbook as an animator
* The drawing principles used to create a believable background
* How to create an animation showreel
* An introduction to the development and evolution of animation

Course Outcome:

On completion of course, the students will able to:

* Apply Knowledge in and across the Disciplines
* Create an animation showreel.

Cycle	Course Content	Instruction Hours
I	1. Installation of Animation software's **2.** Familiarization of Flash environment **3.** Familiarization of Flash shortcuts **4.** Familiarization of Flash templates	22
II	**1.** Creation of objects **2.** Editing of objects **3.** Working with frames **4.** Working with layers **5.** Familiarization of tweening(shape) **6.** Familiarization of tweening(Motion)	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	Adobe Flash Professional CS6: The official training workbook from Adobe Systems. (2012). San Jose, Calif: Adobe.
2	Blair, P. (1994). Cartoon animation. Tustin, Calif: W. Foster Pub
3	Williams, R. (2001). The animator's survival kit. London: Faber.
4	Thomas, F., Johnston, O., & Thomas, F. (1995). The illusion of life: Disney animation

Course Code	Course Title	Semester
DPIT501SET	**INTERNET OF THINGS**	5

Scheme of Instruction	**Scheme of Examination**

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

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:

- To introduce the terminology, technology and its applications
- To introduce the concept of M2M (machine to machine) with necessary protocols
- To introduce the Python Scripting Language which is used in many IoT devices
- To introduce the Raspberry PI platform, that is widely used in IoT applications
- To introduce the implementation of web based services on IoT devices

Course Outcomes:

- Students will understand the Concept of IoT.
- Students will be able to develop IoT Applications.

Unit	Course Content	Instruction Hours
I	Introduction to Internet of Things –Definition and Characteristics of IoT, Physical Design of IoT – IoT Protocols, IoT communication models, IoT Communication APIs IoT enabaled Technologies – Wireless Sensor Networks, Cloud Computing, Communication protocols, Embedded Systems, IoT Levels and Templates Domain Specific IoTs – Home, City, Environment, Energy, Retail, Logistics, Agriculture, Industry, health and Lifestyle.	15
II	IoT and M2M – Software defined networks, network function virtualization, Introduction to Python - Language features of Python, Data types, data structures, Control of flow, functions, modules, packaging, file handling, data/time operations, classes, Exception handling Python packages - JSON, XML, HTTPLib, URLLib, SMTPLib	15

III	IoT Physical Devices and Endpoints - Introduction to Raspberry PI- Interfaces (serial, SPI, I2C) Programming – Python program with Raspberry PI with focus of interfacing external gadgets, controlling output, and reading input from pins.	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	. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2	Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759

Course Code	Course Title	Semester
DPIT501SEP	**INTERNET OF THINGS LAB**	5

Scheme of Instruction	Scheme of Examination
Total Duration : 45Hrs	Maximum Score : 50
Periods / Week: 1+2-T+P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation : 25
Instruction Mode: Tutorial + Practical	Exam Duration : 3 Hours

Course Objective:

- To interact with various devices using IoT.
- Familiar with Arduino and Raspberry PI Boards

Course Outcome:

- Students will be able to use Arduino and Raspberry PI Boards.

- Students will be able to develop IoT Applications.

Cycle	Course Content	Instruction Hours
I	1) Working with temperature sensors using Arduino Board 2) Working with gas sensors 3) Working with Ultrasonic sensors 4) Smart dustbin 5) Controlling light with Wi-Fi	22
II	1) Working with touch sensor 2) Installing Operating System in Raspberry Pi 3) Working with Raspberry Pi 4) Working with GSM 5) Innovative Project	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	. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2	Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759

Course Code	Course Title	Semester
DPCC501SEP	**EMPLOYABILITY SKILLS LAB**	5

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 50
Periods / Week: 1T+2P	Internal Evaluation : 25
Credits: 2	End/ External Evaluation:25
Instruction Mode: Tutorial + Practical	Exam Duration : 3 Hours

Course Objectives

The course enables the students to:

- Develop and communicate more effectively
- Prepare themselves to face the future with enthusiasm and confidence
- Develop team management skills and leadership skills

Course Outcomes

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

- Set their career goals
- Think critically and creatively
- Develop broad career plans
- Evaluate and match the job requirements and skills

Cycle	Course Content	Instruction Hours
I	1. Attitude 2. Adaptability 3. Goal setting, 4. Motivation 5. Time management	22
II	1. Critical thinking and creativity 2. Problem solving 3. Team work 4. Leadership 5. Stress management. 6. Written Communication	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.		

Course Code	Course Title	Semester
DPCS501PET	**CLOUD COMPUTING**	5

Scheme of Instruction	**Scheme of Examination**

Total Duration : 45 Hrs

Periods / Week: 3-L

Credits: 3

Instruction Mode: Lecture

Maximum Score : 100

Internal Evaluation : 30

End/ External Evaluation : 70

Exam Duration : 3 Hours

Course Objectives:

- To explain model of cloud computing.
- To introduce the various levels of services that can be achieved by cloud.
- To describe the security aspects in cloud.

Course Outcomes:

- Ability to understand the virtualization and cloud computing concepts

Unit	Course Content	Instruction Hours
I	**Systems Modeling, Clustering and Virtualization:** Distributed System Models and Enabling Technologies. Computer Clusters for Scalable Parallel Computing. Virtual Machines and Virtualization of Clusters and Data centers. **Foundations:** Introduction to Cloud Computing, Migrating into a Cloud, Enriching the 'Integration as a Service' Paradigm for the Cloud Era. The Enterprise Cloud Computing Paradigm.	15
II	**Infrastructure as a Service (IAAS) & Platform and Software as a Service (PAAS / SAAS):** Virtual machines provisioning and Migration services, On the Management of Virtual machines for Cloud Infrastructures, Enhancing Cloud Computing Environments using a cluster as a Service. Secure Distributed Data Storage in Cloud Computing. Aneka, Comet Cloud, T-Systems', Workflow Engine for Clouds. Understanding Scientific Applications for Cloud Environments.	15
III	Monitoring, Management and Applications: An Architecture for Federated Cloud Computing, SLA Management in Cloud Computing, Performance Production for HPC on Clouds, Best Practices in Architecture Cloud Applications in the AWS cloud, Building Content Delivery networks Clouds, Resource Cloud Mashups.	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	Cloud Computing: Principles and Paradigms by Rajkumar Bi.	
2	Distributed and Cloud Computing. Kal Hwang. Geoffeiy C.Fox. Jack J.Dongarra. E)sevier. 2012.	

Course Code	Course Title	Semester
DPCS502PET	**INFORMATION SECURITY**	5

Scheme of Instruction	Scheme of Examination
Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation : 70
Instruction Mode: Lecture	Exam Duration : 3 Hours

Course Objectives:

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

- Explain the objectives of information security
- Explain the importance and application of each of confidentiality, integrity, authentication and availability
- Understand various cryptographic algorithms.
- Understand the basic categories of threats to computers and networks

Course Outcomes:

- Ability to identify information system requirements for both of them such as client and server.
- Ability to understand the current legal issues towards information security.

Unit	Course Content	Instruction Hours
I	**Attacks on Computers and Computer Security:** Introduction, The need for security, Security approaches, Principles of security, Types of Security attacks, Security services, Security Mechanisms, A model for Network Security	15
II	**Cryptography:** Concepts and Techniques: Introduction, plain text and cipher text, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography, stenography, key range and key size, possible types of attacks.	15
III	**Symmetric key Ciphers:** Block Cipher principles & Algorithms(DES, AES, Blowfish), Differential and Linear Crypt analysis, Block cipher modes of operation, Stream cipher. **Asymmetric key Ciphers:** Principles of public key cryp to systems, Algorithms(RSA, Diffie-Hellman), Key Distribution.	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	Cryptography and Network Security : William Stallings, Pearson Education,4″' Edition
2	Cryptography and Network Security : Atul Kahate, Mc Graw Hill Edition
3	Information Security, Principles and Practice: Mark Stamp, Wiley India.

Course Code	Course Title	Semester
DPCS503PET	**SOFTWARE ENGINEERING**	5

Scheme of Instruction	**Scheme of Examination**
Total Duration : 45 Hrs	Maximum Score : 100
Periods / Week: 3-L	Internal Evaluation : 30
Credits: 3	End/ External Evaluation : 70
Instruction Mode: Lecture	Exam Duration : 3 Hours

Course Objectives:

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

➢ To understanding of software process models such as waterfall and evolutionary models.
➢ To understanding of software requirements and SRS document.
➢ To understanding of different software architectural styles.
➢ To understanding of software testing approaches such as unit testing and integration testing.
➢ To understanding on quality control and how to ensure good quality software.

Course Outcomes:

➢ Ability to identify the minimum requirements for the development of application.
➢ Ability to develop, maintain, efficient, reliable and cost effective software solutions.
➢ Ability to critically thinking and evaluating the assumptions and arguments.

Unit	Course Contents	Instruction Hours
1.	**Introduction and Life Cycle Models:** The Software Engineering Discipline-Evolution and impact, A Solution to the Software Crisis? Programs vs Software Products, Emergence of Software Engineering, Early Computer programming, Control Flow-Based Design, Data Structure-Oriented Design, Data Flow-Oriented Design, Object Oriented Design, Software Life Cycle Models – Classical Waterfall Model, Iterative Water fall Model, Prototyping Model, Evolutionary Model, Spiral Model, RAD Model, Agile developments Models.	15
2	**Software Project Management:** Responsibilities of a Software Project Manager, Job & Skills of a Software Project Manager, Software Project Planning, The SPMP Document, Metrics for Project Size Estimation, Project Estimation Techniques, Scheduling, Work Breakdown Structure, Project Monitoring and Control, Organization and Team Structures, Staffing, Who is a Good Software Engineer? Risk Management,	15
	Requirement Analysis and Specification, Requirements Gathering and Analysis, Software Requirement Specifications(SRS), Contents of the SRS Document, Functional Requirements, Non Functional	

	requirements, system requirements & user requirements, Traceability, Characteristics of a Good SRS Document, Examples of Bad SRS Document, Organization of the SRS Document, Software Design, Coding and Testing, What is a good Software Design?, Cohesion and Coupling- Software Design, Software ergonomics and accessibility, User Interface Design - Characteristics of a good User Interface - User Guidance and Online Help - Graphical User Interface (GUI) vs Text-Based Menu-Based Interface, User center design, adaption: Adaptive & adaptability .	
3	**Software Coding and Testing -** Coding Standards and Guidelines, Code Review- Code Walk-Through - Code Inspection, Clean Room Testing - Software Documentation- Software testing, Verification vs Validation - Design of Test Cases, Unit testing, integration testing , system testing, , Black –Box Testing - White-Box Testing, Debugging Approaches, Program Analysis Tools - Static Analysis Tools - Dynamic Analysis, Software Reliability, Software Quality Management System,	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	Fundamentals of Software Engineering – Rajib Mall (PHI) Fourth Edition.
2	Software Engineering A practitioner's Approach, Roger S Pressman, 6th edition. McGrawHill International Edition.
3	Software Engineering, Ian Sommerville, 7th edition, Pearson education.
4	Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India, 2010.

Course Code	Course Title	Semester
DPCS601PCP	**Industrial Training**	6
Credits: **11**		Periods / Week: 6-T

1) Scheme of Evaluation

S.NO	Subject	Duration	Assessments	Max Marks	Remarks
1	**Industrial Training**	**One Semester**	**1.First Assessment (during middle of semester)**	**250**	To be done in the Industry
			2. Second Assessment (at the end of Semester)	**250**	To be done in the Industry
			3. Final Assessment. (Log Book and Seminar 50 marks Each)	**100**	**To be done in the MANUU**
Total Marks				*600*	

2) OBJECTIVES

On completion of a spell of practical training in a industry, the student will be able to

1. Know the organizational set up from top executive to workmen level

2. Know the aspects to be considered during preliminary projects in respect of Irrigation/Road/Rural water supply/Housing colony etc.,

3. Know the duties of different officers in the organization

4. Know about administrative sanction and technical sanction

5. Know various stages of construction

6. Knows inspection of form work, reinforcement grills etc.,

7. Know the methods of procurement of labour, material and equipment

8. Know tenders, contract and contract systems

9. Know the need & principles supervision of works

10. Know measurement book and muster roll.

3) Minimum Attendance: - The candidate shall put in a minimum of 90% attendance.

4) Minimum Passing Marks :- The minimum Pass marks for industrial training shall be 50% in all assessments.

5) ASSESSMENT SCHEME for First and Second Assessment

These assessments shall be done at industry by the trainers/examiners of industry.

S. No.	Name of the Parameter	Max. Marks Allotted for each Parameter
1.	Attendance and punctuality	25
2.	General conduct during the period	25
3.	Ability to communicate & human relations	25
4.	Familiarity with materials, tools & machinery	25
5.	Attitude towards job	25
6.	Manual skills	25
7.	Comprehension & Observation	25
8.	Supervising ability	25
9.	Safety and Environmental consciousness	25
10.	Maintenance of dairy	25
	Total:	**250**

6) ASSESSMENT SCHEME for Final Assessment

The final assessment shall be carried out in MANUU by a committee comprising of

a) A representative of the Industry where the candidate is undergoing training

b) Head of the Department.

c) One Faculty of Department.

6.1) LOG Book

The trainees are required to maintain neatly a log book giving a brief account of activities performed and observations made on day to day basis at the industry. This is to be checked and counter signed by the supervising personal industry and visiting faculty if deputed by MANUU. At the end of training Log Book shall be evaluated for 50 Marks.

The format of Log Book shall be as follows:-

First Page :- It shall consists of following:-

Name of Candidate:-

Roll No of Candidate:-

Date of Joining the Training:-

Name of the Project:-

Name of the work assigned:-

Second Page onwards :-

S.No	Date	Day	Shift / Timing	Work done / Task/Activity	Signature of Trainer	Remarks

6.2) Seminar/Presentation

A seminar/ Viva-Voice/ Presentation shall be conducted as part of final assessments after the completion of training wherein every candidate will be given fixed time to demonstrate and explain the work experience gained in the training period.

Based on the demonstration viva voice for 50 marks will be conducted.

7) Record Book

Every trainee shall submit two copies of bounded training report of minimum 70 Pages, A4 sized and neatly typed. Detailed Record format shall be obtained from the department.

8) Other Rules

8.1) Student failing in training or falling short of attendance has to re-appear for the training when it is offered next. Candidates have to register for reappearing within 15 days of commencement of new semester. No separate notice will be given in this regard.