B.E. Information Technology Engineering
1ˢᵗ Semester

COURSE CODE	COURSE TYPE	COURS E TITLE	LOAD ALLOCATIONS			MARKS DISTRIBUTION		TOTAL MARKS	CREDITS	% CHANGE
			L	T	P	INTERNAL	EXTERNAL			
BST-1101	Basic ScienceCourse	EngineeringMathematics-I	2	1	0	50	100	150	3	100%
MET-5102	EngineeringScienceCourse	EngineeringGraphics	3	0	0	50	100	150	3	100%
HMT-1102	Humanities &Management Courses	UniversalHumanValues	2	1	0	50	100	150	3	100%
BST-1103	Basic ScienceCourse	AppliedEngineering Physics	2	1	0	50	100	150	3	100%
ECT-1101	EngineeringScienceCourse	BasicElectronicsEngineering	2	1	0	50	100	150	3	100%
CST-3101	EngineeringScienceCourse	ComputerProgramming	2	1	0	50	100	150	3	100%
BSP-1113	Basic ScienceCourse	Applied Engineering Physicslab	0	0	2	50	-	50	1	100%
ECP-1111	EngineeringScienceCourse	BasicElectronicsEngineeringLab	0	0	1	50	-	50	1	100%
CSP-3111	EngineeringScienceCourse	ComputerProgrammingLab	0	0	2	50	-	50	1	100%
TOTAL			13	05	05	450	600	1050	21	

ENGINEERING MATHEMATICS-I (BST-1101)

CLASS	Ist SEMESTER					
BRANCH	COMMON TO ALL BRANCHES					
COURSE TITLE	ENGINEERING MATHEMATICS-I					
COURSE TYPE	BASIC SCIENCE COURSE					
COURSE NO.	BST- 1101	L	T	Marks		
DURATION OF EXAM	3 HOURS	2	1	Internal	External	Credits
				100	50	3

Course Objective:

This course is a 3 credits / 50 hours course at UG level to prepare students to solve engineering problems using the concept of Differential calculus, Integral calculus, Complex trigonometry&Matrices.

Course Outcomes:

At the end of the course the students will be able to:	
CO1	Apply the concept of partial differentiation,general theorems of calculus and maximum and minimum value of functions of two variables.
CO2	Apply the concept of definite integrals to solve problems related with Double and Triple integrals.
CO3	Apply the concept of Hyperbolic functions and Logarithmic functions of complex variables to solve engineering problems.
CO4	Apply the concept of matrices to find the solution of the system of linear equations, rank, Eigen value&Eigen vector of a matrix and verify Cayley's-Hamilton theorem.

Mapping of Course Outcomes and Program Outcomes:

CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	3	2	1									2	3
CO2	3	2	1									2	3
CO3	3	1	1									1	3
CO4	3	2	1									2	3
AVG	3	1.75	1									1.75	

SYLLABUS

SECTION A

UNIT-I: DIFFERENTIAL CALCULUS

Partial differentiation, Euler's theorem on homogeneous functions,Rolle's theorem, Mean value theorem, Taylor's and Maclaurin's series with remainder, Taylor's series in two variables, Maxima and Minima of functions of two variables, Method of Lagrange's multipliers.   **(12 hours)**

UNIT-II: INTEGRAL CALCULUS

Definite integrals with important properties, differentiation under the integral sign, Gamma, Beta and error functions with simple problems, double and triple integrals with simple problems.   **(8 hours)**

SECTION B

UNIT-III: COMPLEX TRIGONOMETRY

Hyperbolic functions of a complex variable, Inverse Hyperbolic functions,Logarithmic function of a complex variable; Summation of series by C+iS method.   **(8 hours)**

UNIT-IV: MATRICES

Introduction, Rank of a matrix,Elementary transformations, Elementary matrices, Inverse using elementary transformation, Normal form of a matrix,Eigen values and Eigen vector, Properties of Eigen value, Cayley Hamilton Theorem,Diagonalizationofmatrix.   **(14 hours)**

BOOKS RECOMMENDED:

1.	Calculus and Analytic Geometry	Thomas and Finney, 9th Edition, Pearson, 2002.
2.	Differential Calculus	S. Narayan and P.K. Mittal, S.Chand, New Delhi.
3.	Higher Engineering Mathematics	B.S Grewal, Khanna Publishers, New Delhi
4.	Engineering Mathematics-I	Dr.Bhopinder Singh
5.	Engineering Mathematics-II	Dr.Bhopinder Singh

NOTE: There will be total eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of calculator is allowed.

ENGINEERING GRAPHICS (MET-5102)

Course Title: Engineering Graphics				Course Code:MET-5102		
Class: B.E. 1st Semester				Branch: CSE/IT/EE/ECE		
Exam. Duration: 3 Hrs.				Credits: 3		
Faculty In-charge: Harinder Pal Singh/ Satish Kumar Sharma	L	T	P	MARKS		
					Internal	External
	3	-	0		50	100

Prerequisite: Geometry and Drawing skills.

Course Objectives:
1. Understanding the fundamentals of Technical Drawing and its uses.
2. Develop the skills to draw different orthographic views of various objects
3. Develop the skills for presenting or recognizing ideas and design of engineering products.

Course Outcomes:

COs	COURSE OUTCOMES	Bloom's Level
	At the end of the course student will be able to: -	
CO 1	Demonstrate the use of Drawing standards.	2
CO 2	Construct Curves i.e, cycloidal, involute, spiral, ellipse etc.	3
CO 3	Draw projection of Planes.	3
CO 4	Draw projection of Prisms, Pyramid, Cylinder, Cone, section and intersection of solids.	3
CO 5	Develop the lateral surfaces of Prism, Pyramids, Cylinder and Cone.	3
CO 6	Draw the Orthographic Projection of simple blocks and introduction to basic commands of Auto CAD.	3

Course Outcome – Program Outcome Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3										1
CO2	2	3										1
CO3	2	3										1
CO4	2	3										1
CO5	2	3										1
CO6	2	3			1							1

SYLLABUS

SECTIONA

Engineering Curves

Conventional lines and signs used in Engineering Drawing, Printing and Lettering, Curves used in Engineering Practice Cycloidals, Involutes, Spiralsand Hellices, Locusofapointon simple mechanisms.

Projection of Planes: Projections of a plane w.r.t. the principle planes in simple and inclined positions. Rotation method and the Auxiliary plane method.

Projection of Solids: Classification and main features-Prisms and Pyramids. Projection of solids inclined to both there ferenceplanes by (I) Rotation Method, and (II) Auxiliary plane method.Projection of solids incombination (Co-axial) insimple and inclined positions.

Sectioning of Solids: Object of sectioning, Types of cutting planes, True shape of section, Auxiliary views of sections of multipleco-axial solids in simple and titled conditions.   **(20hrs)**

SECTIONB

Interpenetration of Solids and Intersection of Surface Inter section of geometrical solids / hollow sections, Tracing of lines of intersection by line method and by section method.

Development of Surfaces: Classification of surfaces, Methods of development-Straight line method and Radial line method, Development of solids and hollow section sinfullor part development of transition pieces.

Orthographic Projections: Orthographic projection of simple blocks (First & Third angles), to draw the third view from given two views.Missing lines in projection.Introduction to AutoCAD.Basic Commands and Basic Drawing Practices.

                                                                                        (21hrs)

RECOMMENDEDBOOKS:

Engineering Drawing	P.SGill
Practical Geometry	V.Laxminarayan & GEV
Engineering Graphics	K.L.Narayanan & P.Kamaish
Principles of Engineering Graphics	P.E Giesecks
Engineering Graphics	Frederic & Michelle.

Note: *There will be eight questions of 20 marks each uniformly covering the entire syllabus. Students are required toattemptfivequestions; selectingatleasttwoquestionsfromeachsection. Use of Calculatorisallowed.*

UNIVERSAL HUMAN VALUES (HMT-1102)

CLASS: B.E. 1ST SEMESTER					
BRANCH: INFORMATION TECHNOLOGY ENGINEERING					
COURSE TITLE:UNIVERSAL HUMAN VALUES	CREDITS: 3				
COURSE No.: HMT1102					
DURATION EXAM.: 3 HRS					
		L	T	P	MARKS	
					Internal	External
		2	1	0	50	100

COURSE OUTCOMES	
At the end of the course student will be able to:-	
CO1	Understand the meaning of happiness and prosperity for a human being.
CO2	Comprehend the holistic approach about the family and society
CO3	Understand the harmony in nature and self-regulation in nature.
CO4	Apply the understanding of harmony in existence in their profession.

CO-PO MAPPING													Level of Bloom's Taxonomy
CO/PO	PROGRAM OUTCOMES												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1						2	2	2	2	1		3	2
CO2						2	2	2	2	1		3	2
CO3						2	2	2	2	1		3	2
CO4						2	2	2	2	1		3	5
AVG						2.00	2.00	2.00	2.00	1.00		3.00	

SYLLABUS

SECTIONA

UNIT1: Course Introduction-Need, Basic Guidelines, Content and Process for Value Education

1. Understanding the need, basic guidelines, content and process for Value Education
2. Self Exploration–what Isit? – its content and process„ Natural Acceptance "and Experiential Validation-as the mechanism for self-exploration.
3. Continuous Happiness and Prosperity-Alookat basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities the basic requirements for fulfillment of aspirations of every human being with their correct priority.   **(11hours)**

UNIT2: Understanding Harmony in the Human Being Harmony in Myself!

1. Understanding human being as aco-existence of the sentiment ('I') and the material 'Body'
2. Understanding the needs of Self ('I') and 'Body'–Happiness and physical facility.
3. Understanding the Body as an instrument of 'I' (being the doer, seer and enjoyer)
4. Understanding the characteristics and activities of 'I' and harmony in 'I'   **(9hours)**

SECTIONB

UNIT3: Understanding Harmony in the Family and Society-Harmony in Human-Human Relationship

1. Understanding Harmony in the family–the basic unit of human interaction
2. Understanding values in human-Human relationship: meaning of justice (*Nyaya)* and program for its fulfillment to ensure mutual happiness (*Ubhay-tript)* Trust (*Vishwas)* and Respect (*Saman)*as the foundational values of relationship
3. Understanding the meaning of trust (*Vishwas)*: Difference between intention and competence Understanding the meaning of respect (*Saman)*, Difference between respect and differentiation; the other salient values in relationship.   **(10hours)**

UNIT4: UnderstandingHarmonyintheNatureandExistence-WholeexistenceasCo-existence

1. UnderstandingtheharmonyintheNature

2. Interconnectednessandmutualfulfillmentamongthefourordersofnature-recyclabilityandself-regulationinnature.

3. Understandingexistence asco-existenceofmutuallyinteractingunitsinallpervasivespace

4. Holisticperceptionofharmonyatalllevelsofexistence. **(10hours)**

BOOKS RECOMMENDED:

R.RGaur,RSangal,GPBagaria,AfoundationcourseinHumanValuesandprofessional Ethics, Excel books,NewDelhi,

REFERENCE BOOKS :

1. PLDhar,RRGaur,ScienceandHumanism,CommonwealthPublishers .

2. SubhasPalekar,2000,How to practice Natural Farming, Pracheen (Vaidik) KrishiTantraShodh,

3. ANagraj,1998,JeevanVidyaekParichay,DivyaPathSansthan,Amar kantak.

4. B.Mahadevan,VinayakRajatBhat,NagendraPavanaR.N,IndianKnowledgeSystem,PHIPublisher.

Note: *There will be eight questions of 20 marks each uniformly covering the entire syllabus. Students are required to attempt fivequestions; selectingatleasttwoquestionsfromeachsection.Use of Calculatorisallowed.*

APPLIED ENGINEERING PHYSICS (BST-1103)

CLASS	Ist SEMESTER					
BRANCH	COMMON TO ALL BRANCHES					
COURSE TITLE	APPLIED ENGINEERING PHYSICS					
COURSE TYPE	BASIC SCIENCE COURSE					
COURSE NO.	BST- 1103	L	T	Marks		
DURATION OF EXAM	3 HOURS	2	1	Internal	External	Credit
				100	50	3

COURSE OUTCOMES

CO	At the end of the course student will be able to:-
CO1	Explain the working principle and applications of lasers and optical fiber in engineering applications.
CO2	Express solids on the basis of band theory &conductivity of semiconductors.
CO3	Discuss the basic concepts of Quantum mechanics.
CO4	Describe the principle of optical phenomena and apply the concept of optical phenomena.
CO5	Apply principles of Maxwell's equation of Electromagnetic theory to solve the problems.
CO6	Apply vector calculus to solve problems of divergence curl and gradient.

CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	2											1	2
CO2	2											1	2
CO3	2	1										1	2
CO4	2											1	3
CO5	2	2										1	3
CO6	2	2										1	3

SYLLABUS

Section A

UNIT1:ELECTROMAGNETICFIELDSANDWAVES

Concepts of Del Operator- gradient, divergence, curl and their physical significances, Displacement Current.Maxwell's equations in integral and differential form, Poynting vector and Poynting theorem, Electromagneticwave propagation in free space (e m wave equations for electric & magnetic fields for free space) &their solutions(planewavesolution), velocityofEMwaves,Relation betweenE_0& B_0. **(08 hours)**

UNIT-II: LASERPHYSICS

Concept and principal of Laser action, Spontaneous and Stimulated emission, Einstein's Co-efficient andrelations, three and four level laser system, coherence and characteristics of laser light, Ruby, He –Ne andCO_2Lasers,Applications of lasers. **(05 hours)**

UNIT-III: QUANTUMMECHANICS

Need of quantum mechanics, Compton effect, concept of wave function, Eigen function and Eigen values, operators in quantum mechanics, Expectation values, Schrodinger's wave equation (Steady-state and Timedependent) forone-dimensionalcase, ApplicationsofSchrodinger'sequation(Timeindependent)toParticleina one-dimensional boxofinfiniteheightand concept of zero pointenergy. **(08 hours)**

Section B

UNIT-IV:SEMICONDUCTORPHYSICS

StructureofAtoms,Energybanddiagram,Metal,InsulatorandSemiconductor,IntrinsicandExtrinsicsemiconductors,Direct&Indirectsemiconductors(E-kdiagrams),Electronandholeconcentrationinintrinsic semiconductor, Charge densities in semiconductor, Generation & Recombination of charge carrier,Law of mobility & conductivity, Current densities in semiconductors, Fermi levels,Mass action law, Drift &Diffusioncurrentand Einsteinrelationforp-njunction,Hall effect,Hallco-efficient &itsapplications. **(08 hours)**

UNIT–V:APPLIEDOPTICS

Thin films, Interference in thin films (by reflection and transmission of light), Theory of Newton's rings byreflected& transmitted light, Determination of wavelength and refractive index of monochromatic light byNewton's rings theory, Plane diffraction grating & its theory for secondary maxima & minima, polarized andunpolarizedlight, NicolPrism as aPolarizer and Analyzer. **(07hours)**

UNIT VI: FIBRE OPTICS

Optical Fibre, Physical structure and basic theory, Propagation of Light in Optical fibres, critical angle, Acceptance angle & acceptance cone, Numerical Aperture, Single mode & Multimode Fibres, Characteristics and General applications of Optical fibres.   **(07 hours)**

BOOKS RECOMMENDED

Fundamentals of Electricity & Magnetism	Duggal & Chabbra
Lasers Fundamentals and applications	A.K. Ghatak
Semiconductor Physics and Devices	Donald A. Neamen
Optics	Brijlal & Subramaniam
Fibre Optics	Ghatak, Tyagrajan
Quantum Mechanics	N. Zettili

Note: *There will be eight questions of 20 marks each uniformly covering the entire syllabus. Students are required to attempt five questions; selecting at least two questions from each section. Use of Calculator is allowed.*

BASICS ELECTRONICS ENGINEERING (BCT-1101)

CLASS: B.E. 1ST SEMESTER					
BRANCH: INFORMATION TECHNOLOGY ENGINEERING					
COURSE TITLE: BASIC ELECTRONICS ENGINEERING	CREDITS: 3				
COURSE CODE : ECT-1101					
DURATION EXAM.: 3 HRS					
	L	T	P	MARKS	
				Internal	External
	2	1	0	50	100

	COURSE OUTCOMES	BT
	At the end of the course student will be able to:-	
CO1	Explain the fundamentals of semiconductor physics and operational characteristics of p-n junction diodes and special purpose diodes	2
CO2	Illustrate the application of semiconductor diodes in rectifiers, filters, clippers and clampers	2
CO3	Describe the working, various configurations and biasing ckts of transistor and its application as an amplifier	2
CO4	Discuss the basic concepts of communication system	2

Mapping of Course Outcomes and Program Outcomes:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2											1
CO2	3	1										1
CO3	3	1										
CO4	2											
Average	2.5	1										1

Detailed Syllabus

SectionA

Unit-I: Semi-Conductors and Diodes:

Introduction, Insulators, Semiconductors and Metals, Mobility and Conductivity, Intrinsic and Extrinsic Semiconductors,Charge Density, Current Components in Semiconductors, Continuity Equation, Introduction, Insulators, Semiconductorsand Metals, Mobility and Conductivity. PN Junction Diode- Volt ampere characteristics, Diode capacitances, Static &dynamic resistances; Types of Diodes- Zener Diode, its breakdown phenomenon and its applications, Photodiodes, LED,VaractorDiode,TunnelDiodes, Schottkydiode.

(10hours)

Unit-II: Diode Applications:

Rectifiers and Filter Circuit: Half Wave Rectifier, Full Wave Rectifier, Bridge Rectifier and their Analysis, LC and PiFilters; Series and Shunt Diode Clippers, Clipping at Two Independent Levels, Clamping Operation, Clamping Circuit,Practical ClampingCircuits. **(10hours)**

Section B

Unit-III: Bipolar Junction Transistors:

Symbol, Construction, and Characteristics of BJT, reach through phenomenon and Base width modulation, TransistorConfiguration:CB,CE,CCConfiguration with necessary currentequations. Transistorasanamplifier andswitch,Derivationrelated toTransistorBiasingand Bias CompensationTechniques. **(10hours)**

Unit-IV: Basics of Communication System:

Introduction to Analog and Digital Communication Systems, Block Diagram Representation of Communication System,theBasicideaofTransmitterandReceiverusedforradiocommunication,VariousFrequencybandsusedforCommunication,Need ofModulationand Introductionto Cellular Communication. **(8hours)**

BOOKS RECOMMENDED:
1. IntegratedElectronics byJ.MillmanandC.C.Halkias,McGrawHillEducation,India.
2. ElectronicsDevicesandCircuitTheorybyR.Boylestadand L.Nashelsky, Pearson India.
3. ElectronicsDevicesandCircuits-IIbyU.A.Bakshiand A.P.Godse,Technical Publications.
4. ElectronicprinciplesbyL.Malvino,Tata   McGrawHillEducation.
5. ElectronicCommunicationSystemsbyG.Kennedy,McGrawHillEducation, India.

Note: *There will be eight questions of 20 marks each uniformly covering the entire syllabus. Students are required toattemptfivequestions; selectingatleasttwoquestionsfromeachsection.Use of Calculator Isallowed.*

COMPUTER PROGRAMMING ENGINEERING (CST-3101)

CLASS	Iˢᵗ SEMESTER					
BRANCH	COMMON TO ALL BRANCHES					
COURSE TITLE	COMPUTER PROGRAMMING					
COURSE TYPE	BASIC COMPUTER COURSE					
COURSE NO.	CST-3101	L	T	Marks		
DURATION OF EXAM	3 HOURS	2	1	Internal	External	Credit
				100	50	3

Course Objective:

Students will be able to develop logics which will help them to create programs, applications in C. Also by learning basic programming they can easily switch over to any other language in future.

Course Outcomes:

At the end of the course the students will be able to:	
CO1	Design and represent a solution for the given problem using basic constructs, algorithms and flowcharts
CO2	Apply various control statements in C to solve the given problems
CO3	Design a modular programs to solve the given program in C language
CO4	Develop a program to solve a given problems using various derived data types such as arrays , pointers , structures and union in C language
CO5	Write a program to solve the given problem using file handling features in C language

Mapping of Course Outcomes and Program Outcomes:

CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	2	-	-	-	1	-	-	1	-	-	-	2	2
CO2	2	2	1	-	2	-	-	1	-	-	-	2	2
CO3	2	2	1	2	3	-	-	1	1	2	-	2	3
CO4	2	2	2	2	3	-	-	1	2	2	-	2	3
CO5	2	2	2	2	3	-	-	1	2	2	-	3	3
AVG	2.00	2.00	1.50	2.00	2.40			1.00	1.66	2.00		2.2	2.6

DETAILED SYLLABUS

SECTION-A

1. **Introduction to Programming (Flow chart pseudocode, compilation etc.)**

   Evolution of programming languages, the compilation process, object code, source code, executable code, fundamentals of algorithms, flow charts.   **(4 Hours)**

2. **Introduction to C, Data Types, Constants, Variables, Expressions, Statements, Operators, Data input and Output**
   Character set, Identifiers, Keywords, Data Types, Constant and Variables, Statements, Expressions,Operators, Precedence of operators, Input-output Assignments.   **(6 Hours)**

3. **Control Statements, Storage Classes, Library Functions**
   Control structures, Decision making and Branching, Decision making & looping Storage Classes: Types of storage classes, Scoping rules Standard Library Functions, advantages and use of various library functions (I/O functionsString Character, Mathematics, Time and Date, functions)   **(10 Hours)**

SECTION- B

4. **Functions, Arrays, Recursion, User Defined Data Types, Structures, Unions, Passing Structure toFunctions.**
   User defined and standard functions, Formal and Actual arguments, Functions category, function prototypes, parameter passing, Call-by value, Call-by-reference, Nested function, Recursion.

   One dimensional Array, One dimensional Array, 2- dimensional arrays: declaration and their applications,Searching in an array Linear search and Binary search

   Sorting in an array. Bubble sort, Selection sort, Insertion sort, String Manipulation functions, Passing array to a Function, Declaration of structures, declaration of unions, pointer to structure &unions .**(10 Hours)**

5. **Pointers, Operation on Pointers, Passing Pointers to Functions, Data Files - Opening. Closing, Creating Data Files**
   Pointer variable and its importance, Pointer Arithmetic, passing parameters by reference, pointer to painter, pointers to functions, Dangling pointer dynamic memory allocation. Console input output functions.Disk input output functions, opening closing and creating Data files.   **(10 Hours)**

BOOKS RECOMMENDED:

1	CHow to Program, 7/e	Paul J Deitel
2	Programming With C	Byron Gottfried
3	Programming With C	E. Balaguruswamy
4	C The Complete Reference	Herbert Schildt,
5	Let us C	YashwantKanitkar

NOTE: There shall be total eight questions of 20 marks each four from each section. Students are required to attempt five questions selecting at least two questions from each scion. Use of calculator is allowed.

APPLIED ENGINEERING PHYSICS LAB (BSP-1113)

CLASS: B.E. 1ST SEMESTER					
BRANCH: INFORMATION TECHNOLOGY ENGINEERING					
COURSE TITLE: APPLIED ENGINEERING PHYSICS LAB		**CREDIT: 1**			
COURSE CODE : BSP-1113					
DURATION EXAM: 3 HRS					
	L	**T**	**P**	**MARKS**	
				Internal	**External**
	0	**0**	**2**	**50**	**-**

COURSE OUTCOMES:

CO	At the end of the course student will be able to:-
CO1	**Demonstrate the phenomenon of Electromagnetic Induction.**
CO2	**Demonstrate the value of Planck's constant using a photocell& find the wavelength of light using helium neon He-Ne laser.**
CO3	**Verify the characteristics of PN Junction diode , transistor & find the resistivity of a semiconductor by four probe method at different temperatures.**
CO4	**Determine the wavelength of monochromatic light using Newton's ring apparatus, the dispersive power of prism using and Numerical aperture in optical fibre.**

CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	2	2						1	2			2	**2**
CO2	2	2						1	2			2	**2**
CO3	2	2						1	2			2	**2**
CO4	2	2						1	2			2	**2**

Experiment No.	TitleofExperiment
EXP-I	To find co-efficient of self-induction of a coil by Anderson's Bridge using headphone.
EXP-II	To measure the number of lines on the diffraction grating using He-Ne laser.
EXP-III	To draw the V-I characteristics of a P-N junction diode.
EXP-IV	To find the wavelength of monochromatic light using Newton's rings apparatus.
EXP-V	To evaluate the value of Planck's constant using a photocell.
EXP-VI	To study the voice transmission through the optical fiber and measure the numerical aperture.
EXP-VII	To find the dispersive power of a given prism using a spectrometer.
EXP-VIII	To study the variation of Magnetic field by using Stewart and Gee's Tangent galvanometer.
EXP-IX	To find the resistivity of a semiconductor by four probe method at different temperatures.
EXP-X	To find the impedance of LCR circuit.
EXP-XI	To study the Common base/common emitter characteristics of PNP/NPN junction transistor.

NOTE: A minimum of six experiments is to be performed covering the diverse aspects of engineering physics

BASIC ELECTRONICS ENGINEERING LAB (ECP-1111)

CLASS: B.E.1ST SEMESTER					
BRANCH: INFORMATION TECHNOLOGY ENGINEERING					
COURSE TITLE: BASIC ELECTRONICS ENGINEERING LAB			CREDITS: 1		
COURSE CODE : ECP-1111					
DURATION EXAM.: 2 HRS					

	L	T	P	MARKS	
				Internal	External
	0	0	2	50	-

	COURSE OUTCOMES	BT
	At the end of the course student will be able to:-	
CO1	Understand the various electronic components and mount the basic electronic circuit on bread board	2
CO2	Plot the operational characteristics of semiconductor diodes and BJT and study self bias circuit using BJT	2
CO3	Demonstrate the applications of diode as rectifier, clippers and clampers	2
CO4	Study the process of modulation and demodulation in communication system	2

Mapping of Course Outcomes and Program Outcomes:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2							1	1			1
CO2	2							1	1			
CO3	2							1	1			1
CO4	2											
Average	2							1	1			1

LISTOFPRACTICALS

1. Tostudytheactiveandpassiveelectroniccomponents&tosoldervariouselectroniccircuitsonPCB.
2. ToassemblevariouselectroniccircuitsonBreadboard
3. Todetermine andplotthe operatingcharacteristicsofthe PNjunctiondiode.
4. TostudythecharacteristicsofZenerdiode,photodiode,TunneldiodeandLED.
5. TostudyHalfwaveandFull wave/ BridgeRectifier.
6. To study the operation characteristics (Input / Output) of the PNP/ NPN Transistor (CommonEmitter/CommonBase).
7. Tostudyclipperand clamper circuitsusingdiodes.
8. Designofself-biascircuitsusingBJT.
9. TofindthemodulationindexofAM.
10. Tofindthedemodulation ofanAMandalsofindthemodulatingfrequency.
11. TostudythefrequencyresponseofIntermediatefrequencyTransformer (IFT)

   Note: *Eachstudent hastoperformatleast eightexperiments .*

COMPUTER PROGRAMMING (CSP-3111)

CLASS	Iˢᵗ SEMESTER							
BRANCH	INFORMATION TECHNOLOGY ENGINEERING							
COURSE TITLE	COMPUTER PROGRAMMING LAB							
COURSE TYPE	BASIC COMPUTER COURSE							
COURSE NO.	CSP-3111	L	T	P	Marks			
DURATION OF EXAM	2 HOURS	0	0	2	Internal	External		Credit
					-	50		1

Course Objective:

Students will be able to develop logics which will help them to create programs, applications in C. Also by learning basic programming they can easily switch over to any other language in future.

Course Outcomes:

At the end of the course the students will be able to:	
CO1	Discuss the working of different editors and compilers for writing the C program
CO2	Implement the basic operators and control statements in C language
CO3	Develop a program to solve the given problem using functions
CO4	Write a program to solve the given problem using array, structures and unions
CO5	Design a program using pointers to access variables and different file handling operations

Mapping of Course Outcomes and Program Outcomes:

CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	2	2	-	-	2	-	-	2		-	-	2	2
CO2	2	2	-	-	2	-	-	2		-	-	2	2
CO3	2	2	2	-	2	-	-	2	2	-	-	2	3
CO4	2	2	2	-	3	-	-	2	2	-	-	2	3
CO5	2	2	2	-	3	-	-	2	2	-	-	2	3
AVG	2.00	2.00	2.00		2.40			2.00	2.00			2.00	2.6

LAB EXPERIMENTS:

Experiment1: Problem solving using computers: Familiarization with programming environment.

Experiment2: Variable types and type conversions: simple computational problems using arithmeticexpressions.

Experiment3: Branching and logical expressions: Problems involving if-then-else structures.

Experiment4: Loops, while and for loops Iterative problems e g. sum of series

Experiment5:1D Arrays: searching, sorting:ID Array manipulation

Experiment6: 2Darrays and Strings, memory structure: Matrix problems, String Operations

Experiment 7: Functions: call by value, call by reference: Simple functions

Experiments 8: Recursion, structure of recursive calls: Recursive functions

Experiment9: Pointers, structures and dynamic memory allocation: Pointers and Structures

Experiment10: File handling: File creation, writing and reading a file, File manipulation Operations.

Note: A minimum of ten experiments is to be performed.

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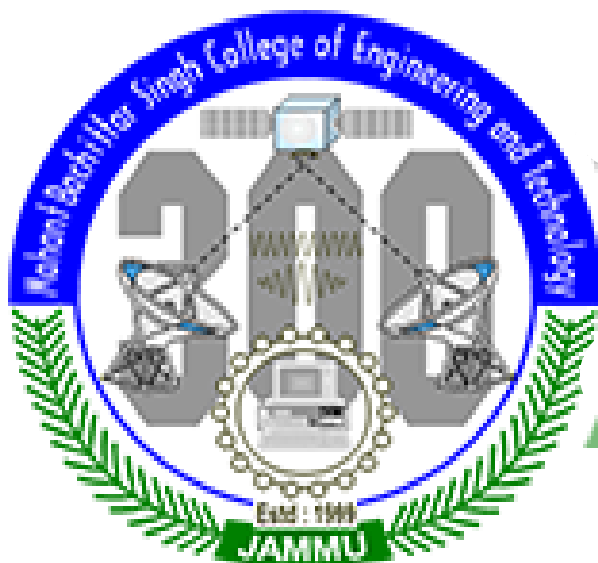
Syllabus of 1stSemester

Year – 2022 onwards

BRANCH:
Information Technology

B.E. Information Technology Engineering
B.E. 2nd Semester

Contact Hrs.: 23 Hours/week

COURSE CODE	COURSE TYPE	COURSE TITLE	LOAD ALLOCATIONS			MARKS DISTRIBUTION		TOTAL MARKS	CREDITS	% CHANGE
			L	T	P	INTERNAL	EXTERNAL			
BST1201	Basic Science Course	Engineering Mathematics-II	2	1	0	50	100	150	3	100
BST1102	Basic Science Course	Applied Engineering Chemistry	2	1	0	50	100	150	3	100
CET6201	Engineering Science Course	Environmental Science	2	1	0	50	100	150	3	100
EET2201	Basic Science Course	Fundamentals of Electrical Engineering	2	1	0	50	100	150	3	100
HMT1202	Humanities & Management Courses	Professional Communication Skill	2	1	0	50	75	100	2	100
MEP5212	Engineering Science Course	Workshop Manufacturing Practices	0	0	3	50	-	50	1.5	100
BST1212	Basic Science Course	Applied Engineering Chemistry Lab	0	0	2	50	-	50	1	100
HMT1212	Humanities & Management Courses	Professional Communication Skill lab	0	0	2	50	-	50	1	100
EET2211	Engineering Science Course	Fundamentals of Electrical Engineering lab	0	0	2	50	-	50	1	100
TOTAL			**10**	**04**	**09**	**425**	**475**	**900**	**18.5**	

ENGINEERING MATHEMATICS-II (BST1201)

CLASS: B.E. 2ND SEMESTER	
BRANCH: COMMON TO ALL BRANCHES	
COURSE TITLE: ENGINEERING MATHEMATICS-II	CREDITS: 3
COURSE CODE : BST1201	
DURATION EXAM.: 3 HRS	

	L	T	P	MARKS	
				THEORY	SESSIONAL
	2	1	0	100	50

Course Objective:

This course is a 3 credits / 50 hours course at UG level to prepare students to solve engineering problems using the concept of Infinite series, Fourier series, Differential equations& Partial differential equations.

Course Outcomes:

CO	At the end of the course student will be able to: -
CO1	Apply the concept of p-test, Comparison test, Cauchy's root test, D'Alembert ratio test, Raabe's test, Logarthmic test, Gauss test & Lebnitz's test to check the convergence and divergence of the infinite series.
CO2	Solve problems using Fourier series.
CO3	Solve the differential equations of first order and higher order.
CO4	Apply concept of Partial differential equation to find solution of Linear, Non-Linear, Homogeneous and Non- Homogeneous equations.

CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	3	1	1									1	3
CO2	3	1	1									2	3
CO3	3	2	1									1	3
CO4	3	2	1									2	3
AVG	3	1.5	1									1.5	

DETAILED SYLLABUS

SECTION A

UNIT-I: INTRODUCTION TO INFINITE SERIES

Convergence and divergence of a Series: p-test, Comparison Test, Cauchy Root Test, D'Alembert Ratio Test,

Raabe's Test, Gauss Test, Logarithmic Test, Leibnitz Test for alternating series   **(10 hours)**

UNIT-II: FOURIER SERIES

Euler's formula, sufficient conditions for a Fourier expansion, functions having points of discontinuity, change of intervals. Odd and even functions, Fourier expansion of Odd and even periodic functions, half range series, typical wave forms, Parseval's formula, complex form of Fourier –series.   **(10 hours)**

SECTION B

UNIT-III: ORDINARY DIFFERENTIAL EQUATIONS

Differential equations of first order and first degree: Linear and Bernoulli's differential equations, Exact and non-exact differential equations. Higher order linear differential equations: Complementary solution, particular integral and general solution of these equations, variation of parameters technique to find particular integral of second order differential equations

(10 hours)

UNIT-IV: PARTIAL DIFFERENTIAL EQUATIONS

First order linear p.d.e, Non-Linear p.d.e. of 1st order, solution by Charpit's method, Four Standard forms of non-linear p.d.e with reference to Charpit's technique: $f(p,q) = 0$, $f(z, p,q) = 0$, $f(x,p) = g(y,q)$ and Clairaut's form. Homogeneous and Non-homogeneous higher order linear partial differential equations with constant coefficients, Rules for finding P.I and C.F, Non-Linear equations of 2nd order   **(12 hours)**

BOOKS RECOMMENDED:

1	Advanced Engineering Mathematics	R.K. Jain, S.R.K Iyenger, 2nd edition Narosa New Delhi.
2	Differential Equations	G. F. Simmons
3	Partial differential equations	M. D. Raisinghania
4	Engineering Mathematics-I	Dr. Bhopinder Singh
5	Engineering Mathematics-II	Dr. Bhopinder Singh

NOTE: There will be total eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of calculator is allowed.

ADVANCED ENGINEERING CHEMISTRY (BST1202)

CLASS: B.E. 2NDSEMESTER	
BRANCH:COMPUTER/E&C/ELECTRICAL/IT ENGINEERING	
COURSE TITLE: ADVANCED ENGINEERING CHEMISTRY	CREDITS: 3
COURSE CODE : BST1202	
DURATION EXAM.: 3 HRS	

	L	T	P	MARKS	
				THEORY	SESSIONAL
	2	1	0	100	50

COURSE OBJECTIVES:

This course is 3 credit / 42 hours course at UG levels to prepare students to develop the interest in the industrial and domestic applications with focus on stereochemistry, Water, Polymers composite materials and alloys with environmental health considerations.

COURSE OUTCOMES	
At the end of the course student will be able to:-	
CO 1	Explain the drugs based on mode of action and study the importance of green chemistry in day to day life..
CO 2	Explain the properties, types and applications of plastics, paints and varnishes.
CO 3	Identify the structure of compounds with the help of spectroscopy.
CO 4	Explain basic knowledge of material science and importance of electrochemistry &Nano particles.
CO 5	Identify the various problems in the procedure associated with water treatment and importance of colloids.

CO-PO MAPPING													
CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	1	1										1	2
CO2	2	1				1	2					2	2
CO3	1	1										1	2
CO4	1	1				1	1					1	2
CO5	2	2										2	3
AVG	1.4	1.2				1.0	1.5					1.4	

SECTION – A

Unit – I   GREEN CHEMISTRY AND DRUGS

Green Chemistry: Definition and Need of Green Chemistry, Principles and Applications of Green Chemistry.

Drugs: Definition, structure and applications of following drugs: -
      a)Tranquilizers   b)Antibiotics   **6hrs**

Unit – II   PLASTICS, PAINTS AND VARNISHES

Plastics: Introduction and importance of plastics, classification of plastics, moulding constituents of plastics, moulding of plastics into articles (compression, injection, transfer and extraction moldings).

Paints: Introduction and requisites of a good paint, properties and uses of white pigments such as white lead and lithopone.

Varnishes: Definition, Preparation of Oil Varnish, Differences between Paints and Varnishes.   **8hrs**

Unit – III   SPECTROSCOPIC TECHNIQUES AND APPLICATIONS

UV Spectroscopy: Principle, Band nature of UV Spectrum, types of electronic Transitions and applications.
IR Spectroscopy: Principle, molecular vibrations and applications.
NMR Spectroscopy: Principle, shielding and de-shielding, equivalent and non-equivalent protons, chemical shift and applications of NMR.   **8 hrs**

SECTION – B

Unit – IV   NANO CHEMISTRY AND MATERIAL SCIENCE

Nano Chemistry: Introduction and properties of nano particles, Nano materials - Graphene and fullerenes.

Material Science: Types, Properties and importance of materials: Metals, Semiconductors and Insulators.

Electrochemistry: Introduction to Electrolysis and Faraday's laws, Electrochemical cells: Galvanic cell and its application. Mass transfer by electroplating and diffusion.

          10 hrs

Unit – V   WATER TREATMENT AND COLLOIDS

Water Treatment: Introduction, softening of water by Zeolite and ion-exchange processes, priming and foaming, sludge and scale formation, determination of hardness of water by EDTA method, Numerical on hardness and softening of water.

Colloids: Definition, classification and properties of colloids- Brownian motion,   Electrophoresis and Tyndall effect.   **10 hrs**

NOTE: There will be total eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section.

Books Recommended:

S.No.	BOOKS RECOMMENDED	AUTHOR
1.	Engineering Chemistry	Sharma, B.K.
2.	Material Science and Engineering	William Callister
3.	An introduction to Nanomaterials and Nano science	A.K Das & Mahua Das
4.	Spectroscopy of Organic Compounds	Kalsi, P.S.

REFERENCE BOOKS

1.	Engineering Chemistry	Shashi, Chawla
2.	Spectroscopy of Organic Compounds	Silverstein
3.	Electrochemistry	Samuel Glasstone

Books Recommended:

S.No.	TITLE	AUTHOR
1.	Engineering Chemistry	Jain & Jain
2.	Engineering Chemistry	Sharma, B.K.
3.	Engineering Chemistry	Dara, S.S.
4.	Engineering Chemistry	Shashi, Chawla
5.	Organic Chemistry	Bahl, B.S.
6.	Environmental Chemistry	De, A.K.
7.	Spectroscopy of Organic Compounds	Silverstein
8.	Spectroscopy of Organic Compounds	Kalsi, P.S.
9.	Polymer Science	Gowrikar, V.R. etal
10.	Engineering Chemistry	Dr. Rajinder Kumar

ENVIRONMENTAL SCIENCE (CET6201)

For Examination to be held in December 2022, 2023, 2024, 2025.

CLASS	2ND SEMESTER					
BRANCH	COMP /EE/ IT/MECH.					
COURSE TITLE	ENVIRONMENTAL SCIENCE					
COURSE TYPE	BASIC SCIENCE COURSE					
COURSE NO.	CET6201	L	T	Marks		
DURATION OF EXAM	3 HOURS	2	1	Theory	Sessional	Credit
				100	50	3

Course Objective:
This course is a 3 credits / 50 hours course at UG level to prepare students to understand the eco-system, population, social issue, energy and environment.

Course Outcomes:

	At the end of the course the students will be able to:
CO1	Gives the brief understanding and knowledge about eco-systems,biodiversityandits conservation.
CO2	Understandthebasicconceptsofenvironmentalstudiesandnatural resources.
CO3	Discuss and learn aboutvarious typesofenvironmentalpollutionsandtheir measures to control.
CO4	Learn and gain knowledge about the basics of social issues, population, and theenvironment.

Mapping of Course Outcomes and Program Outcomes:

CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	1					1	3	1				3	2
CO2	1					1	3	1	1			3	2
CO3	1					2	3	1	1			3	3
CO4	1					2	3	1				3	3
AVG	1					1.5	3	1	0.5			3	

DETAILED SYLLABUS

SECTION A

Ecosystem: Concept, Energy flow, Structure and function of an ecosystem. Producers , consumers and decomposers, energy flow in ecosystem, carbon and nitrogen cycles, ecological succession, Food chains, food webs and ecological pyramids, Forest ecosystem, Grassland ecosystem, Desert ecosystem and Aquatic ecosystems. **(10hrs)**

Natural Resources: Renewable and Non-renewable resources. Forest resource: use and over exploitation, deforestation, effects on forest and tribal people.

Water resources: use and over utilization of surface and ground water and its conservation.

(10hrs)

SECTION-B

Environmental Pollution: Definition, Cause, effects and control measures of different types of pollutions.Air pollution- Sources, effects, control, air qualitystandards, air pollution act, air pollution measurement.effects of air pollution on human beings, animals and materials.

Water Pollution-Sources and impacts, Soil Pollution-Sourcesand impacts, disposal of solid waste. Greenhouse gases – effect, acid rain. Ozone layer depletion. **(10 hrs)**

Social Issues and the Environment: Sustainable development and Sustainable use of Resources, Urban problemsrelated to energy, Energy resources: Growing energy needs, renewable and nonrenewable energy sources use ofalternate energy sources, Land resources: Land as a resource, land degradation, soil erosion and desertification, Roleof an individual in conservation of natural resources. Environment Protection Acts: Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act and Forest Conservation Act (**10hrs)**

Reference books:
1. Environmentalengineeringbypeavy,roweandtchobanoglous,mc graw–hillinternationaledition.
2. Elementsofenvironmentalscienceandengineering,p.Meenakshi,2ndedition,phipublishers.
3. Environmentalstudiesbykaushikandkaushik,newagepublisher.
4. Abasiccourseinenvironmentalstudiesbydeswalanddeswal,dhanpatrai &co.
5. Textbookofenvironmental sciencesandtechnologybym.Anjireddy,bspublication.
6. Textbookofenvironmentalstudiesbydeeshitadave&p.Udhayabhaskar,cengagelearning.

Note: There shall be total eight questions, four from each section. Five questions will have to be attempted selecting at least two from each   section. Use of calculator is allowed.

FUNDAMENTALS OF ELECTRICAL ENGINEERING (EET2201)

For Examination to be held in December 2022, 2023, 2024, 2025.

CLASS	2nd SEMESTER					
BRANCH	COMP / IT/E&C					
COURSE TITLE	FUNDAMENTALS OF ELECTRICAL ENGINEERING					
COURSE TYPE	ENGINEERING SCIENCE COURSE					
COURSE NO.	EET- 2101	L	T	Marks		
DURATION OF EXAM	3 HOURS	2	1	Theory	Sessional	Credit
				100	50	3

Course Objective:
This course is a 3 credits / 50 hours course at UG level to prepare students to solve engineering problems using the concept of kirchoff's laws, ohm's law, network theorems, ac and dc electrical circuits.

Course Outcomes:

At the end of the course the students will be able to:	
CO1	Understanding of electric circuit terminology, Kirchhoff's laws ohms law and energy sources
CO2	Analyse different network theorems to solve electrical circuits
CO3	Applying the knowledge of basic concept of electrical AC circuits to solve electrical circuits and analysis of star delta circuits.
CO4	Understanding of working principle of single phase transformer, losses , regulation and transformer test.

Mapping of Course Outcomes and Program Outcomes:

CO/PO	CO-PO MAPPING												Level of Bloom's Taxonomy
	PROGRAM OUTCOMES												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	3							1	3	1		1	3
CO2	3							1	3	1		1	4
CO3	3						1	1	3	1		2	3
CO4	3						1	1	3	1		2	3
AVG	3.00						1	1.00	3			1.5	

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COURSE OUTCOMES (CO) : At the end of the course the student will be able to :-

CO1	The basic concepts of electric circuit terminology, Kirchhoff's and Ohm's laws.
CO2	The circuits using electrical theorems.
CO3	The basic terminologies in AC and star delta circuits.
CO4	The basic concepts of single phase transformer and installation of low voltage electrical components.

Section – A

Unit-1
Electric Circuit Laws & Energy Sources : Basic electric circuit terminology, Ohm's law, Kirchhoff's laws, Circuit parameters (Resistance, inductance & capacitance, series & parallel combination of resistance, inductance & capacitance, ideal & practical voltage and current sources and their transformation, dependent voltage sources and dependent current sources.   **(08 Hours)**

Unit-2
D.C. Circuit Analysis : Power and energy relations, analysis of series parallel D.C. circuits, Mesh & Nodal methods, Star – Delta transformation, Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem: Reciprocity Theorem.   **(10 Hours)**

Section – B

Unit-3
A.C. Circuit : Introduction, Average ad effective values of periodic functions, instantaneous and average power, Phasor and complex number representation. Solution of sinusoidally excited R, L, C circuits, Resonance in series and parallel circuits, quality factor. Concept of 3 phase voltage and current in Wye(y), Delta circuits and their relationship.   **(08 Hours)**

Unit-4
Transformers and Electrical Installations : Principal operation of single phase transformers, ideal practical transformer (no-load & on-load phasor diagrams), equivalent circuit, losses in transformers, transformer test (open circuit & short circuit), regulation and efficiency, auto transformer, Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of wires and cables.   **(10 Hours)**

Test / References:
1. Electrical Engineering Fundamentals.
2. Electrical Technoloogy.
3. Electrical Technology.
4. Basic Electrical Engineering.
5. Basic Electrical Engineering.

Note :   There will be eight questions of 20 marks each uniformly covering the entire syllabus. Students are required to attempt five qyestions; selecting at leat two questions from each section. Use of Calculator is allowed.

PROFESSIONAL COMMUNICATION SKILLS (HMT1202)

CLASS: B.E. 2nd SEMESTER					
BRANCH: CSE/IT/E&C/ELECTRICAL					
COURSE TITLE: PROFESSIONAL COMMUNICATION SKILLS	CREDITS: 2				
COURSE CODE :HMT1202					
DURATION EXAM.: 3 HRS					
	L	**T**	**P**	**MARKS**	
				THEORY	**SESSIONAL**
	2	0	0	75	25

COURSE OBJECTIVES:

This course is 2 credit course at UG level to prepare students to empower students to carry out day to day communication at the work place by adequate understanding of various types of communication to facilitate efficient interpersonal communication.

COURSE OUTCOMES	
At the end of the course student will be able to:-	
CO 1	Demonstrate communication skills required for effective business communication.
CO 2	Use Linguistic capabilities for Group discussion and public speaking.
CO 3	Exhibit professional etiquettes
CO4	To encourage all round development of students by focusing on soft skills

CO-PO MAPPING													
CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1								1		3		2	2
CO2								1	1	3		2	3
CO3								1		3		2	3
CO4								1	1	2		2	2
AVG								1.00	1.00	2.75		2.00	

UNIT-1:

Communication skills & writing practice: Introduction, Elements of Business Communication, Media of verbal communication (oral & written), Barriers to Communication, Technology-Enabled Business Communication, Types of letter- inquiry letter, reply to inquiry, claims letter, adjustment and sales letter, job letter.   **(9hrs)**

UNIT-2:

Listening & Speaking skills: Process of listening, types of listening, techniques to improve listening ability, Group Discussion-Advantages, Purpose, Group Dynamics, and Guidelines for Effective Group discussion. Speaking Skills-Skills of Effective speaking, Tips for writing scripts and speeches.   **(7 hrs)**

SECTION-B

UNIT-3:

Professional development–Introduction, Objectives of Professional development, Tips for Professional development, Activities that contribute to Professional development .   Interviews- Meaning, Types of interview, tips for giving an interview and handling questions.   **(8hrs)**

UNIT-4:

Life Skills: Introduction, Need and importance of life management skills, concept of hard and soft skills; Difference between Hard and Soft Skills, Interviews- Meaning, Types of interview, tips for giving an interview and handling questions.   **(7 hrs**)

BOOKS RECOMMENDED:

S.No.	Title	Author
1.	Communication Skills (Second Edition)	Sanjay Kumar&Pushap Lata, Oxford University Press.
2.	Functional Aspects of Communication Skills	Dr. Prajapati Prasad, Published by S.K. Kataria& Sins
3.	An Approach to Communication Skills	Indrajit Bhattacharya, Published by Dhanpati Rai & Co. Ltd.
4.	Communication Skills	Varinder Kumar and Bodh Raj, Published by Kalyani Publishers
5.	An Approach to Communication Skills	BhanuRanjan.
6.	Master of Life Management	Dr.Dantu Murali Krishna, published by Invincible Publishers

NOTE: There shall be total eight questions, four from each section.

 Each question carries 15 marks. Five questions will have to be attempted, selecting at least two from each section

WORKSHOP TECHNOLOGY (MEP5212)

CLASS: B.E. 2nd SEMESTER	
BRANCH: CSE/IT/E&C	
COURSE TITLE: WORKSHOP MANUFACTURINF PRACTICES	CREDITS: 1.5
COURSE CODE : MEP5212	
DURATION EXAM: 3 HRS	

	L	T	P	MARKS	
				THEORY	PRACTICAL
	0	0	3	0	50

COURSE OBJECTIVES:

To develop a skill in dignity of labour precision, safety at workplace, team work and right attitude. To identify various hand fools, measuring skills and general safety precautions in workshop.

COURSE OUTCOMES	
At the end of the course student will be able to:-	
CO1	Prepare different joints, wooden patterns by using carpentry tools.
CO2	Prepare the mould using natural foundry sands.
CO3	Perform smith forging operation in preparing different parts.
CO4	Carry out fabrication of different joints by welding processes.
CO5	Assemble flat pieces using fitting tools.

CO-PO MAPPING													
CO/PO	PROGRAM OUTCOMES												Level of Bloom's Taxonomy
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	3	1			2			2	2	1		2	3
CO2	3	1			2			2	2	1		2	3
CO3	3	1			2			2	2	1		2	3
CO4	3	1			2			2	2	1		2	3
CO5	3	1			2			2	2	1		2	3
AVG	3.0	1.0			2.0			2.0	2.0	1.0		2.0	

Shop Practice:-

Unit I:- CARPENTRY:-

1   Middle/cross lap joint
2   Mortise and Tenon T –joint
3   Pattern making of open bearing

Unit II :-   Foundry:-

1.   Moulding of open bearing (simple pattern)
2.   Moulding of sliding job of Bench Vice (split piece pattern)

Unit III:- SMITHY :-

1.   Upsetting drawings & Bending operation.

Unit IV :- WELDING :-

1.   Preparation of single V – Butt joint by gas / arc welding processes
2.   Preparation of Double V-Butt joint by gas / arc welding
3.   Corner Joint by gas / arc welding
4.   Lap joint by gas / arc welding

Unit V:-   FITTING :-

1.   Assembly of snap fitting of MS-Flat pieces (Male and Female)
2.   Assembly and fitting of two L- shaped rectangular MS flat pieces

BOOKS RECOMMENDED:-

S.NO.	TITLE	AUTHOR
1.	Workshop Technology	Hajra and Chowdhary
2.	Manufacturing Technology Vol I& II	Rao. P.N
3.	Manufacturing Technology	Gowri .P. Hariharan and A. Suresh Babu

ADVANCEDENGINEERING CHEMISTRY LAB (BSP1212)

CLASS: B.E. 2ND SEMESTER	
BRANCH COMPUTER/E&C/ELECTRICAL/IT ENGINEERING	
COURSE TITLE: APPLIED ENGINEERING CHEMISTRY LAB	**CREDITS: 1**
COURSE CODE : BSP1212	
DURATION EXAM.: 3 HRS	

	L	T	P	MARKS	
				THEORY	**PRACTICAL**
	0	**0**	**2**	**0**	**50**

COURSE OBJECTIVES:

This course is 1 credit / 20 hours lab course at UG levels to enable students to acquire knowledge of engineering chemistry on volumetric analysis, identification, synthesis, fluid mechanics used in the industry.

COURSE OUTCOMES	
CO	**At the end of the course student will be able to:-**
CO1	**Determine the alkali content in antacid tablets.**
CO2	**Determine the percentage of cu in CuSO4 titration.**
CO3	**Determine the percentage of CaCO3 in precipitated chalk.**
CO4	**Estimate the hardness of water by EDTA complexometric method.**
CO5	**Determine volumetrically no of moles of water of crystallization in sample of Mohr's salt.**
CO6	**Analyze an overview of preparation and identification of organic compound.**
CO7	**Identify the organic compound using qualitative analysis technique.**
CO8	**Apply analytical techniques to evaluate chemical components related to fluid and practical mechanics.**

CO-PO MAPPING													
CO/PO	**PROGRAM OUTCOMES**												**Level of Bloom's Taxonomy**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	
CO1	**2**							**1**				**1**	**2**
CO2	**2**							**1**					**2**
CO3	**2**							**1**					**2**
CO4	**2**	**1**						**1**				**2**	**2**
CO5	**2**							**1**					**2**
CO6	**2**	**1**						**2**				**1**	**2**
CO7	**2**	**1**						**2**				**1**	**2**
CO8	**2**	**1**						**2**				**1**	**2**
AVG	**2.00**	**1.00**						**1.38**				**1.20**	

S. No.	Title of Experiment
1.	Determine Volumetrically the number of molecules of water of crystallization present in the given sample of Mohr's salt, x gms. of which have been dissolved per litre provided N/10 $K_2Cr_2O_7$ (using an external indicator).
2.	Determine Volumetrically the percentage of Cu in a sample of $CuSO_4$ crystals, Z gms of which have been dissolved per litre, provided 0.IN $Na_2S_2O_3$.
3.	Determine the percentage of $CaCO_3$ in precipitated chalk. You are provided with IN HCI and 0.IN NaOH.
4.	To analyse the given antacid tablets.
5.	To determine the coefficient of viscosity of an unknown liquid using Ostwald Viscometer.
6.	Determine the surface tension of a unknown liquid Stalagmometer.
7.	To prepare a pure and dry sample of Glucosazone.
8.	To analyse the absorbance of solutions at different concentrations by UV Spectrophotometer.
9.	Determine the method of purification of organic compounds by paper chromatography.
10.	Organic Analysis: Identify the following organic compounds (preparation of at least one derivative).
11.	Determine the total hardness of a sample of water by complexometric method (using EDTA).
12.	Determine the percentage of calcium oxide in cement.

Note:-   A minimum of ten experiments to be performed.

BOOKS RECOMMENDED:-

S.No.	Title	Author
1.	A manual of practical Engineering Chemistry	(Dr. Rajinder Kumar)
2.	Experimental Engineering chemistry	(Shashi Chawla)

PROFESSIONAL COMMUNICATION SKILLS LAB (HMP1212)

CLASS: B.E. 1ST SEMESTER					
BRANCH: CSE/IT/E&C/ELECTRICAL					
COURSE TITLE: COMMUNICATION SKILLS			CREDITS: 1		
COURSE CODE : HMP1212					
DURATION EXAM.: 3 HRS					
	L	**T**	**P**	**MARKS**	
				THEORY	**SESSIONAL**
	0	**0**	**2**	**0**	**50**

COURSE OBJECTIVES:

This course is a 1 credit course at UG level to prepare students to enable them to learn better pronunciation through stress on word accent, intonation, and, to train them to use language effectively to face interviews, group discussions, public speaking.

COURSE OUTCOMES	
At the end of the course student will be able to:-	
CO 1	Demonstrate communication skills required for effective business communication.
CO 2	Use Linguistic capabilities for Group discussion and public speaking.
CO 3	Analyze and demonstrate professional etiquettes and interpersonal skills.

CO-PO MAPPING													
CO/PO	**PROGRAM OUTCOMES**												**Level of Bloom's Taxonomy**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	
CO1					2			1	1	3		3	3
CO2								1	1	3		2	3
CO3					1			1	1	2		2	3
AVG					1.5			1.0	1.0	2.6		2.3	

List of Practical's:

Listening Skills

1. Listen to text read aloud in normal speed with focus on intonation,
2. After listening the student can fill in blanks, choose a suitable title, make a summery, and be able to answer comprehension questions from the passage read aloud.

Speaking skills

3. Formal & Informal Conversation
4. Presentation Skills

Interpersonal Skills

5. Group Discussion
6. Interviews, Mock Interviews

Career Building & Resume writing

7. SWOT Analysis
8. Resume Writing

Life Skills Activities

9. Self Management
10. Role play

Note: 1. Eligibility to appear in Practical Test: 8 practicals

2. Simulation/ virtual labs are used to enhance the practical ability of students.

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FUNDAMENTALS OF ELECTRICAL ENGINEERING LAB (EEP2211)

For Examination to be held in December 2022, 2023, 2024, 2025.

CLASS	2ⁿᵈ SEMESTER					
BRANCH	COMP / IT/E&C					
COURSE TITLE	FUNDAMENTALS OF ELECTRICAL ENGINEERING					
COURSE TYPE	ENGINEERING SCIENCE PRACTICAL					
COURSE NO.	EEP2211	T	P	Marks		
DURATION OF EXAM	3 HOURS	0	2	Theory	SESSIONAL	Credits
					50	1

Course Objective:
This course is a 1 credit course at UG level to prepare students to experimentally verify the kirchoff's laws, ohm's law, network theorems and transformer tests.

Course Outcomes:

At the end of the course the students will be able to:	
CO 1	Experimentally verify the basic circuit laws
CO 2	Analyse different network theorems by connecting various elements.
CO3	Measure current in series parallel RLC Circuit
CO4	Understanding of working principle of single phase transformer and its test.

Mapping of Course Outcomes and Program Outcomes:

CO-PO MAPPING													
CO/PO	**PROGRAM OUTCOMES**												**Level of Bloom's Taxonomy**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	
CO1	3							1	3	1		1	3
CO2	3							1	3	1		1	4
CO3	3						1	1	3	1		2	3
CO4	3						1	1	3	1		2	**3**
AVG	**3.00**						**1**	**1.00**	**3**			**1.5**	

Detailed Syllabus

List of Experiments:

1. Verification of Kirchhoff's Laws

2. Verification of Superposition Theorem

3. Verification of Thevenin's Theorem

4. Verification of Norton's Theorem

5. Verification of Reciprocity Theorem

6. Verification of Maximum Power Transfer Theorem

7. Measurement of current in various branches of RLC Series parallel circuit.

8. Study of three phase a.c circuits with star delta connected load.

9. Study of single phase transformer. Determination of polarity test of given single phase transformer

10. To perform open and short circuit test on single phase transformer

11. Study of wires, Cables, fuses and MCBs.

Note : Minimum of seven experiments is to be performed by each students.

UNIVERSITY OF JAMMU

NOTIFICATION
(23/Sept/Adp/ 83)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Competent bodies, has been pleased to authorize the adoption of the revised Syllabi and Courses of Studies in **Bachelor of Technology (B.Tech.) in Information Technology** for Semester III & IV under the **Credit Based System** as per the new **AICTE** Model Curriculum **(as given in the Annexure)** for the candidates of **Govt./Pvt. Engineering Colleges affiliated with the University of Jammu** for the Examinations to be held in the years indicated against each Semester as under:-

Branch	Semester	For the Examination to be held in the years
Information Technology	**Semester-III**	**December 2023, 2024, 2025 and 2026**
	Semester-IV	**May, 2024, 2025, 2026 and 2027**

The Syllabi of the course are available on the University Website: www.jammuuniversity.ac.in.

Sd/-
DEAN ACADEMIC AFFAIRS

No. F.Acd/III/23/ 9969-9979
Dated: 13/09/2023
Copy for information & necessary action to:-
1. Dean Faculty of Engineering
2. Principal. GCET/MBSCET/BCET/YCET
3. C.A to the Controller of Examinations
4. Joint/Assistant Registrar (ExamsProf./Eval Prof./Confidential)
5. Incharge University Website

Assistant Registrar (Academic)
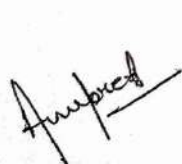
B.Tech. Information Technology 3rd Semester Examination to be held in the Year December 2023, 2024, 2025, 2026

B.Tech. Information Technology 3rd Semester   **Contact Hrs: 28**

COURSE CODE	COURSE TYPE	COURSE TITLE	LOAD ALLOCATION			MARKS DISTRIBUTION		TOTAL	Credits	%Change
			L	T	P	Internal	External			
BST8303	Basic Science Course	Graph Theory	2	1	0	50	100	150	3	100%
CST3301	Professional Core Course	Object Oriented Programming Using C++	2	1	0	50	100	150	3	100%
CST3302	Professional Core Course	Digital System Design	2	1	0	50	100	150	3	100%
ITT4301	Professional Core Course	Fundamentals of Database Management System	2	1	0	50	100	150	3	100%
CST3304	Professional Core Course	Computer Organization and Architecture	2	1	0	50	100	150	3	100%
HMT7302	Humanities & Social Science Course	Organization Management	2	1	0	50	100	150	3	100%
CSP3311	Professional Core Course	Object Oriented Programming Using C++ Lab	0	0	2	50	-	50	1	100%
CSP3312	Professional Core Course	Digital System Design Lab.	0	0	2	50	-	50	1	100%
ITP4311	Professional Core Course	Fundamentals of Database Management System Lab	0	0	2	50	-	50	1	100%
MOC4311	Massive Open Online Course	MOOC	0	0	2	50	-	50	1	100%
NCC4301	Non-Credit Course	Internet of Things	2	0	0	Satisfactory/ Un-Satisfactory			Non-Credit	100%
TOTAL			14	6	8	500	600	1100	22	

B.Tech. Information Technology 4th Semester Examination to be held in the Year May 2024,2025,2026,2027

B.Tech. Information Technology 4th Semester   Contact Hrs: 26

COURSE CODE	COURSE TYPE	COURSE TITLE	LOAD ALLOCATION			MARKS DISTRIBUTION		TOTAL	Credits	%Change
			L	T	P	Internal	External			
ITT4401	Professional Core Course	Principles of Operating System	2	1	-	50	100	150	3	100%
CST3401	Professional Core Course	Data Structures	2	1	-	50	100	150	3	100%
ITT4402	Professional Core Course	System Analysis and Design	2	1	-	50	100	150	3	100%
CST3403	Professional Core Course	Java Programming	2	1	-	50	100	150	3	100%
HMT7401	Humanities & Social Science Course	Management Accounting And Finance	2	1	-	50	100	150	3	100%
MOC4401	Massive Open Online Course	SWAYAM / NPTEL	3	-	-	100	-	100	3	100%
CSP3411	Professional Core Course	Data Structures Lab	-	-	3	75	-	75	1.5	100%
ITP4411	Professional Core Course	Principles of Operating System lab	-	-	3	75	-	75	1.5	100%
CSP3413	Professional Core Course	Java Programming Lab	-	-	2	50		50	1	100%
TOTAL			13	5	8	550	500	1050	22	

CLASS: 3RD SEMESTER   CREDITS: 3
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: GRAPH THEORY   L   T   P   **MARKS**
COURSE NO.: BST8303   External   Internal
DURATION OF EXAM: 3 HOURS   2   1   0   100   50

COURSE OUTCOMES	
At the end of the course the student will be able to: -	
CO1	Understand and apply fundamental aspects of graph theory tools in solving practical problems
CO2	Evaluate the basics concepts of groups, its examples and related results.
CO3	Create graphs and trees using different transversal methods.
CO4	Improve proof of writing skills

Detailed Syllabus
Section-A

Algebraic System
Definition, examples and related basic theorems on Groups, Sub groups, Cosets& Normal Subgroups, Logic operators, truth tables   **(10 Hrs)**

Graph Theory
Basic terminology, multi graphs and weighted graphs, connectivity; walk, trail andpath, circuits & Cycles, shortest path in weighted graphs, Algorithm of shortestpath, Hamiltonian and Eulerian paths and circuits, Eulerian trail & circuit, Euleriangraphs, Hamiltonian cycle, Hamiltonian graph, Konisberg Bridge problem.
(12 Hrs)

Section-B

Planar Graph
Introduction to Planar Graph, maps and region, Euler's formula.Kuratowski'sgraphs and Kuratowski's theorem.
(05Hrs)

Trees and Cut Sets
Trees, Rooted Trees, path lengths in rooted trees, prefix codes binary search trees,spanning trees and cut sets and circuits.   **(05Hrs)**

Books Recommended:

1. Discrete Mathematics and its Applications, Tata   Kenneth H. Rosen
   McGraw – Hill

2. Discrete Mathematics with Applications,4th   Susanna S. Epp
   edition, Wadsworth Publishing Co. Inc.

3. Elements of Discrete Mathematics A Computer   C L Liu and D P
   Oriented Approach, 3rd Edition by, Tata   Mohapatra
   McGraw – Hill

4. Graph Theory   NarsinghDeo

NOTE: There will be eight questions of 15 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

CLASS: 3RD SEMESTER   **CREDITS: 3**
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: OBJECT ORIENTED
PROGRAMMING USING C++
COURSE NO: CST3301
DURATION OF EXAM: 3 HOURS

	L	T	P	MARKS	
				External	Internal
	2	1	0	100	50

COURSE OUTCOMES

At the end of the course the student will be able to: -

CO1	Understand the difference between Structured Programming approach and Object Oriented Programming approach.
CO2	Acquire knowledge in developing object oriented solutions to problems by learning the usage of Data Abstraction, Encapsulation, and Inheritance.
CO3	Design and Implement programs using Classes and Objects.
CO4	Understand the concept of Inheritance, Polymorphism, Operator Overloading and Function Overloading.
CO5	Apply the concepts of Object Oriented Programming in Templates & Exception Handling, File related operations and in real-time application development.

Detailed Syllabus

Section- A

Review of Pointers : Passing parameters, Array of Pointers, Character Pointers.   **(2 hrs)**

Programming Techniques : Unstructured, Procedural, Modular. Introduction to Objects, Object and Cohesion (3 hrs) Overview of C++: Object Oriented programming, Encapsulation, Polymorphism, Inheritance, Console I/O, C++ Comments.   **(3 hrs)**

Classes and Objects: Metaclass, Abstract class, Public and Private variables, Constructor and Destructor Functions, Constructors taking parameters, Object Pointers, In-Line Functions, Automatic Inlining, Friend Functions, This Pointer, New & Delete, Array of Objects.   **(12 hrs)**

Section- B

Overloading: Function Overloading, Overloading Constructor Functions, Operator overloading, Overloading Binary and Unary Operators, Overloading Relational & Logical Operators.   **(8 hrs)**

Inheritance: Using Protected Members, Multiple Inheritance, Virtual Base Classes, Introduction to Virtual Functions.   **(6 hrs)**

Templates & Exception Handling: Use of Templates, Function Templates, Class Templates, Handling Exception.   **(4 hrs)**
File Handling: I/O Basics, Ifstream, Ofstream, Fstream, Open(), Close(), EOF(), Binary I/O, Get(), Put(), Read(), Write(), Random Access, Seekg(), Seekp(), Tellg(), Tellp().   **(4 hrs)**

BOOKS RECOMMENDED:

1. Programming in C++   Balaguru swamy
2. C++ the Complete Reference   Herbert Schildt.
3. Mastering C++   K.R. Venugopal & T. Ravishankar & Raj Kumar .
4. Turbo ++   Robert Lafore.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

B.Tech. Information Technology 3rd Semester Examination to be held in the Year December 2023, 2024, 2025, 2026

CLASS: B.E. 3RD SEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: DIGITAL SYSTEM DESIGN
COURSE NO. : CST3302
DURATION OF EXAM: 3 HOURS

CREDITS: 3

L	T	P	MARKS	
			External	Internal
2	1	0	100	50

COURSE OUTCOMES

At the end of the course the student will be able to: -

CO1	Examine the structure of number systems and perform the conversion among different number systems.
CO2	Illustrate reduction of logical expressions using boolean algebra, k-map and tabulation method and implement the functions using logic gates.
CO3	Realize combinational circuits for given application and also able to implement combinational logic circuits using programmable logic devices.
CO4	Design and analyze the synchronous and asynchronous sequential circuits using flip-flops.

Detailed Syllabus

Section- A

Introduction: Difference between Analog and Digital systems, Advantages and Disadvantages of digital system. **(2 hrs)**

Number Systems: Introduction, Number systems: Decimal, Binary, Octal, Hexadecimal; Conversions; Representation of Signed Numbers, Sign magnitude, 1's complement, 2's complement, r's complement; Binary Arithmetic – addition, subtraction, multiplication and division, Binary codes: BCD, Excess-3 code, Gray code, Hamming code, Alphanumeric codes. **(10 hrs)**

Minimization Techniques : Introduction, Boolean Algebra: Laws and Theorems, Demorgan's Theorem, Simplification of Boolean functions by Boolean algebra, K-map method and Quine McClusky method in SOP and POS forms. **(5 hrs)**

Logic gates : Introduction, Logic Gates: Basic gates, Universal gates, Derivation of other gates from universal gates, Half adder, Full adder, BCD adder, Half and Full subtractor, Binary multiplier, Dividers, ALU. **(6 hrs)**

Section-B

Combinational Circuits: Code converters, Magnitude comparators, Parity Generators/checkers, Encoders, Priority encoder, Decoders, Multiplexers, Demultiplexer. Programmed logic devices–Read only memory, Programmable Read only Memories (PROM) and Programmable Logic Arrays (PLA), Programmable Array Logic (PAL). **(10 hrs)**

Sequential Circuits: Introduction, Latches, Flip-flops: Types, their conversions and applications, Shift Registers: Serial/Parallel in/out, Bi-directional, Universal shift register, Counters: Synchronous, Asynchronous, Decade, Binary, Modulo-n, Shift register counters; Design of Synchronous sequential circuits, State Reduction and Assignment. **(10 hrs)**

BOOKS RECOMMENDED:

1.	Digital Design	Morris Mano
2.	Digital Electronics	R.P Jain
3.	Digital Logic Design	J.P. Hayes
4.	Digital Electronics & Circuits Design	Thomas Mac calla
5.	Digital Electronics	R.K Gour

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

CLASS: 3rd SEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: FUNDAMENTALS OF DATABASE MANAGEMENT SYSTEM
COURSE NO.: ITT4301
DURATION OF EXAM: 3 HOURS

CREDITS: 3

L	T	P	MARKS	
			External	Internal
2	1	0	100	50

COURSE OUTCOMES	
At the end of the course the student will be able to: -	
CO1	Explain simple DBMS with respect to traditional file system & Discuss DBMS architecture and other related concepts.
CO2	Describe various data models like Physical, Object based and Record based Data Models.
CO3	Apply Relational Algebra, Relational Calculus and SQL commands for handling DBMS
CO4	Apply the concept of Normalization to maintain database consistency.
CO5	Create schedules for concurrency control system and understand locking techniques.
CO6	Explain the different types of failures and recovery management schemes

Detailed Syllabus
Section - A

Basic Concepts: - Overview of Database Management System, DBMS vs Traditional File Processing System, Database system and architecture, Data Independence, Components of Database System Environment, Components of DBMS, DBMS-Advantages and disadvantages, Database Users, Data Models. **(4 hours)**

Data Modeling using Entity Relationship Model: -ER Model Concepts, Notations for ER Diagram, Constraints, Design issues, Weak Entity sets, Extended ER features, Design of ER database scheme, Reduction of ER schemes to tables. **(4 hours)**

Relational Model and Database Design: - Attributes and domains, Tuples, Relations and Schemas, Relation Representation, Keys, Integrity Rules, Relational Algebra, Relational Calculus. Functional Dependency, Normal Forms-1NF, 2NF, 3NF, BCNF, Multivalued Dependency, Fourth Normal Form, Normalization using Join Dependencies **(8 hours)**

Section- B

Query Processing and Optimization
Algorithms for executing query operations, Heuristics for query optimizations. **(4 hours)**

Transactions: - Transaction concepts, transaction state, implementation of Atomicity and Durability, Concurrent execution, Serializability, Recoverability, Implementation of isolation. **(6 hours)**

Concurrency Control: - Lock based protocols, Timestamp based protocols, Validation based protocols, Multiple Granularity, Multiversion Schemes, Deadlock Handling. **(8 hours)**

Recovery Systems: -Failure classification, Storage Structure, Recovery and Atomicity, Recovery concept based on Deferred Update, Recovery concept based on immediate update, Shadow Paging, Recovery with Concurrent Transactions, Buffer Management. **(6hours)**

BOOKS RECOMMENDED:
1. Database concepts   Korth,Silberchatz–TMH
2. An Introduction to Database Systems   Bipin C. Desai
3. Principles of Database Management system Aho Ullman
4. Oracle   Ivan Bayross.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

CLASS: 3ᴿᴰ SEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: COMPUTER ORGANIZATION AND ARCHITECTURE
COURSE NO. : CST3304
DURATION OF EXAM: 3 HOURS

CREDITS: 3

MARKS

	L	T	P	External	Internal
	2	1	0	100	50

COURSE OUTCOMES

At the end of the course the student will be able to: -

CO1	Understand the basic architecture and operational concepts in designing CPU.
CO2	Analyze various component units (ALU& CU) and Organization of CPU.
CO3	Analyze various memories management techniques like Virtual Memory and Cache Memory.
CO4	Apply the concepts of Parallel Processing in designing high performance processors
CO5	Analyze the working of different types of Processors

Detailed Syllabus

Section-A

Introduction: - Basic structure of Computers, stored programme concept, Basic Operational concepts, Functional Units, Machine language, concept of memory locations, addresses, addressing modes. **(6 hrs)**

Processing and execution: - Processing unit, execution of instructions, control step sequence, different types of instruction, ALU Design, Arithmetic Processes, Control Unit Design, Hardwired & Micro programmed Control Unit. **(6 hrs)**

CPU:-General Register Organization, Stack Organization, Instruction format, RISC, CISC. **(4 hrs)**

Input output organization: - Introduction to I/O Devices, I/O Systems–Programmed Control, Interrupt controlled & DMA Data Transfer Schemes, I/O Processors and their Architecture (IOP). **(6 hrs)**

Section-B

Memory Management: - Memory organization, Characteristics of memory size, Access time, Read/write cycletime, Sequential and Random-access semiconductor memories, Virtual memory and its implementation, Cache memory and its types- Split and Unified, levels of Caches. **(6 hrs)**

Parallel processing – Basic Concepts of Parallel Processing, Architectural Classification Schemes, Levels of Parallelism, Parallelism in Uniprocessor System, Introduction to Multiprocessor Systems, Its Classification, Multiprocessor vs Multicomputer Systems, Introduction to Pipelining, Classification of Pipelined processors, Pipelined Structures, Principles of Designing Pipelining Processors, Pipeline Hazards & Conflicts. **(8 hrs)**

Vector and SIMD Array Processing --Introduction to Vector Processors, Array Processors, Their Architectural Classification and Characteristics, Multicore processors. **(6 hrs)**

BOOKS RECOMMENDED:

Books Recommended:

1.	Computer Architecture & Organization	John P. Hayes (McGraw Hill)
2.	Computer System Architecture	Morris Mano
3.	Computer System Architecture	V.K. Jain
4.	Computer Organization	Carl V. Hamacher
4.	Fundamentals of Parallel Processing	Harry F. Jordan and Gita Alaghband

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed

CLASS: 3RD SEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: ORGANISATION MANAGEMENT
COURSE NO.-HMT7302
DURATION OF EXAM: 3 HOURS

CREDITS: 3

L	T	P	MARKS	
			External	Internal
2	1	0	100	50

COURSE OUTCOMES

At the end of the course the student will be able to: -

CO1	Understand how organizations functions
CO2	Understand the various behaviour of the organizations and their processes to compete in the business world.
CO3	Understand basic management concepts and enhance the leadership skills of the managers.
CO4	Understand appropriate intervention in directing employees towards achieving organisationalgoal.

Detailed Syllabus
Section-A

Concept and Evolution of Management

Management: Meaning, Characteristics, Functions and Scope. Classical Theory of management: Henry . Fayol Administrative Management Theory and Taylor Scientific Management Theory. **(6Hrs)**

Planning

Characteristics, Significance and Barriers to effective Planning Process of Planning and its types. Steps taken to make Planning effective. **(6Hrs)**

Decision Making

Meaning, Characteristics, Importance & Process of Decision Making. Types of Decisions, Techniques for improving Group Decision Making. Limitations of Decision Making. **(6Hrs)**

Section – B

Organizing

Forms of Organization: - Formal and Informal. Departmentation and its bases. Forms of organization structure: -Line, Line &Staff organization structure. **(6Hrs)**

Directing and Leading

Direction: - Importance and Principles of Direction. Leadership - characteristics, Functions, Importance. Styles of Leadership- Autocratic, articipative and Free – Rein. Communication: Concept, Process Types.& Barriers. **(6Hrs)**

Controlling and Coordinating

Controlling: - Concept, Importance, Process. Types and Stages of Control. Co-ordinating: Importance. and Principles, External & Internal Co-ordination, Techniques of Effective Coordination.

(6Hrs)

Books Recommended:
1. Essentials of Management   Koontz, H &Weihrich, H., McGrawHill Int.
2. Principles & Practice of Management   Prasad, L.M.
3. Management & organization   Allen, McGraw Hill Int.
4. Principles& Functions of Management   Jain, J.K PrateekPrak
5. Organization and Management   Agrawal, R.D.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed

CLASS: 3ᴿᴰ SEMESTER

BRANCH: INFORMATION TECHNOLOGY

COURSE TITLE: OBJECT ORIENTED PROGRAMMING LAB

COURSE NO.: CSP3311

DURATION OF EXAM: 3HRS

CREDIT: 1

MARKS

L	T	P	External	Internal
0	0	2	-	50

COURSE OUTCOMES	
After Completion of this course the student will be able to: -	
CO1	Develop solutions for a range of problems using Objects and Classes.
CO2	Implement the concepts of Constructors, Destructors and Operator Overloading.
CO3	Apply fundamental algorithmic problems including Type Casting, Inheritance.
CO4	Implement the concepts of Run Time Polymorphism using Virtual Functions
CO5	Implement the concepts of Generic Programming, Templates, File Handling using C++.

Lab Experiments:

Experiment 1	Design and implement programs using Pointers.
Experiment 2	Design and implement programs using Classes and Objects.
Experiment 3	Design and implement programs using Constructors and Destructors.
Experiment 4	Design and implement programs using the concepts of Inheritance.
Experiment 5	Design and implement programs using Friend Function.
Experiment 6	Design and implement programs using New and Delete operator.
Experiment 7	Design and implement programs using the concepts of Overloading.
Experiment 8	Design and implement programs using the concepts of files.

NOTE: Additional Lab experiments/practicals will be performed based on the course contents requirements.

CLASS: B.E. 3RD SEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: DATA SYSTEM DESIGN LAB.
COURSE NO. :CSP3312

CREDIT: 1

MARKS

L	T	P	External	Internal
0	0	2	-	50

	COURSE OUTCOMES
	After Completion of this course the student will be able to: -
CO1	Implement logic gates and realization of OR, AND, NOT AND XOR Functions using universal gates.
CO2	Design and implement combinational circuits like half adder/full adder, half subtractor/fullsubtraction, code converters, comparators, MUX/DEMUX
CO3	Design and implement sequential circuits like flip-flops, counters and shift registers

Lab Experiments:

Experiment 1	Verification of truth tables of Logical Gates AND / OR / NOT, NAND, NOR, EXOR,EXNOR,Gates.
Experiment 2	Implementation of Boolean expression using AND, OR, NOT, NAND, & NOR logic
Experiment 3	Implementation of Decoder, Encoder , Code Converter using IC's & Gates.
Experiment 4	To implement Half Adder, Half Subtractor, Full Adder, Full Subtractor using different IC's &Gates.
Experiment 5	Implementation of multiplexer, demultiplexer using IC's & gates.
Experiment 6	Design of BCD to 7 segment display using logical gates & IC's.
Experiment 7	To design & verify truth table of Flip Flops.
Experiment 8	To design various asynchronous counters using flip flops, gates & IC's
Experiment 9	To design various synchronous counters using flip flops, gates & IC's.
Experiment 10	To design & verify truth tables of shift Registers.

NOTE: Each student has to perform at least 8 experiments out of which 40% shall be simulation based. Additional Lab experiments/practicals will be performed based on the course contents requirements

B.Tech. Information Technology 3rd Semester Examination to be held in the Year December 2023, 2024, 2025, 2026

CLASS: 3rd SEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: FUNDAMENTALS OF DATABASE
MANAGEMENT SYSTEM LAB
COURSE NO. : ITP4311

CREDIT: 1

MARKS

L	T	P	External	Internal
0	0	2	-	50
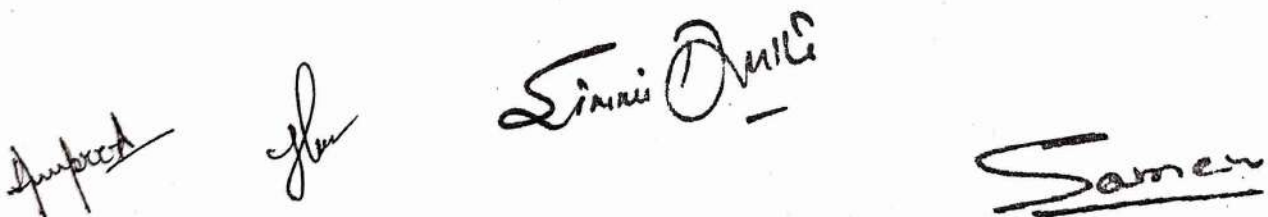
COURSE OUTCOMES	
After Completion of this course the student will be able to: -	
CO1	Devise queries using DDL, DML, DCL and TCL commands.
CO2	Implement various types of functions in SQL
CO3	Implement the concept of High level programming language (Control structures, Procedures and Functions)

Lab Experiments:

Experiment 1	Implement DDL Commands
Experiment 2	Update the database system using DML commands
Experiment 3	Apply Integrity constraints for the specified system.
Experiment 4	Implement various Aggregate functions, Operators and TCL
Experiment 5	Implement various Date and String functions
Experiment 6	Implementation of Group by, having, order by, like, Union, Intersect, Minus
Experiment 7	Perform Join operations
Experiment 8	Implementation of Analytical Functions using OVER and PARTITION with ORDER BY
Experiment 9	Implementation of Views in SQL
Experiment 10	High level programming language extensions (Control structures, Procedures and Functions)

NOTE: Additional Lab experiments/ practical's will be performed based on the course contents requirements.

CLASS: B.E 3RD SEMESTER

BRANCH: INFORMATION TECHNOLOGY CREDIT: 1
COURSE TITLE: MooC
COURSE NO. : MOC4311

L	T	P	MARKS
0	0	2	50

A massive open online course (MooC) is a model for delivering learning content to any person who wants to take a course by means of the web. It has been incorporated in the 3rd semester.
To evaluate a MooCs course following is the scheme proposed:

Breakup of Marks:

- **Attendance- 10 marks**
  Students will have to visit the lab twice a week as per the time table and pursue their respective online course.

- **Report file-15marks**
  A detailed report of about 20-25 pages has to be submitted to the department at the end of the semester. It should contain details about the course that was undertaken by the student. A copy of the assignments with solutions that have been uploaded on the MooC platform should also be included in the final report. A copy of the certificate if awarded should also be appended to thereport.

- **Presentation- 15 marks.**
  The presentation should be given to the peers/students focusing on the key points of the course with an aim to share the knowledge.

- **Certification- 10 marks**
  The students awarded with the certificate will be given 10 marks.(Copy to be attached in the report.)

The students can opt for a choice of MooC from the list provided hereunder: -

1. C#
2. Web Development
3. Python
4. PHP
5. Android
6. Programming using MATLAB
7. JavaScript Basics
8. Client Server Communication
9. Web Security Fundamentals
10. SQL

But not limited to this. Students can opt for a course other than in the above list after approval from the Department.

CLASS: B.E. 3RD SEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: INTERNET OF THING
COURSE No: NCC4301

CREDITS: 0

L	T	P	Marks
2	0	0	Satisfactory/Unsatisfactory

COURSE OUTCOMES

At the end of the course the student will be able to: -	
CO1	Explain what Internet of Things is.
CO2	Understand mechanism and key technologies in Internet of Things.
CO3	Explain business models in the Internet of Things.
CO4	Understand the application of Internet of Things.

Detailed Syllabus

Unit I: Introduction
What is the Internet of Things?: History of IoT, About IoT, Overview and Motivations, Examples of Applications, Internet of Things Definitions and Frameworks :IoT Definitions, IoT Architecture

Unit II: Fundamental IOT Mechanisms and Key Technologies
Identification of IoT Objects and Services, Structural Aspects of the IoT, Key IoT Technologies

Unit III: Business Models For The Internet Of Things
Business Models and Business Model Innovation, Business Model Scenarios for the Internet of Things.

Unit IV: Internet of Things Application
Smart Metering Advanced Metering Infrastructure, e-Health Body Area Networks, City Automation, Automotive Applications, Home Automation, Smart Cards

NOTE: This is a Mandatory Non-Credit Course. Two objective papers will be conducted internally by the department. The students are required to score at least 40% or above in totality to be considered qualified in the course.

Books Recommended:

1. Building the Internet of Things with IPv6 and MIPv6 — Daniel Minoli

2. Architecting the Internet of Things — Bernd Scholz,Reiter, Florian Michahelles

3. Identity Management for Internet of Things — Parikshit N. Mahalle&Poonam N. Railkar

CLASS: 4ᵀᴴ SEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: PRINCIPLES OF OPERATING SYSTEM
COURSE NO.: ITT4401
DURATION OF EXAM: 3 HOURS

CREDITS: 3

L	T	P
2	1	0

MARKS

External	Internal
100	50

COURSE OUTCOMES

At the end of the course the student will be able to: -

CO1	Understand operating system structure
CO2	Analyze the various process scheduling schemes
CO3	Understand the concept of deadlock
CO4	Compare Various Memory Management Schemes
CO5	Understand system threats and need of security

Detailed Syllabus
Section-A

Introduction: Operating System- objectives, functions, The Evolution of Operating Systems, Types of Operating Systems, Operating System Structure-System components, operating system services, System Calls, System Programs, System structure, Virtual Machines. **(5 Hrs)**

Process Management: Process Concept, Process scheduling, Operations on Processes, Interprocess Communication-Shared Memory System and Message Passing Systems, Remote Procedure Call, Remote Method Invocation. **(5 Hrs)**

CPU Scheduling: Scheduling concepts, Scheduling Criteria, Scheduling algorithms, Algorithm Evaluation, Multiprocessor scheduling, Thread Scheduling **(5 Hrs)**

Process Synchronization: Principles of Concurrency, Critical Regions-Critical Section Problem, Semaphores, Classical Problems of Synchronization **(4 Hrs)**

Deadlocks: System model, Deadlock Characterization, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Deadlock Recovery. **(5Hrs)**

Section-B

Memory Management: Base machine, Resident Monitor, Multiprogramming with fixed partitions, Multiprogramming with variable partitions, Paging, Segmentation, Virtual Memory-Demand Paging, Page Replacement, Allocation of frames, Thrashing, Cache memory organization. **(10Hrs)**

I/O Management & Disk Scheduling: I/O Devices and the organization of I/O function, I/O Buffering, Disk I/O Operating System Design Issues. **(4Hrs)**

File System: File Concept-File organization and Access mechanism, File Directories, File Sharing, Implementation issues. **(3Hrs)**

Protection & security: Protection- Goals of protection, Domain of protection, Access & rights. Security & threats - the problems of security, authentication, program threats, System threats, Threat monitoring. **(3Hrs)**

Books Recommended:

1.	Operating System: Concept & Design	Milenkovic M
2.	Operating System Design & Implementation	Tanenbaum, A.S.
3.	Operating System Concepts	Silbersehatz A. and Peterson, J.L.
4.	Operating Systems	Stalling, Willam
5.	An Introduction to operating Systems	Dietel, H.N.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

CLASS: 4TH SEMESTER   CREDITS: 3
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: DATA STRUCTURES
COURSE NO.: CST3401
DURATION OF EXAM: 3 HOURS

L	T	P	MARKS	
			External	Internal
2	1	0	100	50

COURSE OUTCOMES

At the end of the course the student will be able to: -

CO1	Understand and analyze the time Space Complexity of programs and data structures.
CO2	Knowledge of various data structures ,their operations, applications and relative merits.
CO3	Ability to develop algorithmic solutions to various problems by using appropriate Data Structure and to analyze the solutions. .
CO4	Develop algorithms for various sorting and searching techniques and compare their performance in terms of Space and Time complexity

Detailed Syllabus
Section- A

Introduction to data structures: - Concepts of data and algorithm, Relation between Data Structure & Algorithm, Introduction to Time & Space complexity, Types of asymptotic notations and orders of growth, Algorithm efficiency - best case, worst case, average case,, Representation of Arrays, Sparse matrices. **(2Hrs)**

Stacks and Queues: - Concept of Stacks, Operation on Stacks, Application of stacks, Expressionevaluation, conversion of Infix, Postfix, Prefix expressions , Recursion, Tower of Hanoi, Concept of Queues, Operation on Queues, Types of queues - Priority Queues, Circular Queues, Double endedQueues. **(10Hrs)**

Linked Lists: - Insertion, Deletion and Traversal on Linear Linked Lists, Doubly Linked List, Circular Linked List, Header nodes, Stacks & Queues using linked list, Application-Polynomial manipulation, Dynamic memory management, Garbage Collection **(10Hrs)**

Section-B

Trees: -Binary trees and its representation using Linked list, Operations on Binary Trees, Traversal Algorithms, Applications, Binary Search Trees -insertion, deletion , finding min and max , Threaded Binary Trees and its Traversal algorithms, Optimum Search Trees,AVLtrees -basic operations (rotation , insertion and deletion) **(10Hrs)**

Graphs: -Representation of Graphs, Traversal methods, Applications Undirected Graphs, Directed Graph& their Traversal, Depth first, Breadth First, Shortest Path algorithms-Dijkstra, Minimum Cost Spanning tree (Prim and Kruskal). **(8Hrs)**

Sorting & Searching: Exchange Sort (Bubble, Quick sort), Selection &Tree Sorting, Insertion sort, Shell Sort, Address Calculation Sort, Merge & Radix Sort, Analysis of sorting algorithms Sequential Searching, searching an Ordered Table, Index sequential search, Binary search, Tree searching **(5Hrs)**

Books Recommended:
1 Data Structure using C   Tenenbaum, Langsam, Augenstein
2 Fundamentals of data structures   Horowiz E. and Sahni S.
3 Data structures and Program Design   Robert L. Kruse.
4 Data Structures & Algorithm   Aho, Hopcraft and Ullman.
5 Data Structure with Applications   Sorenson.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

CLASS: 4TH SEMESTER   CREDITS: 3
BRANCH: INFORMATION TECHNOLOGY
COURSETITLE: SYSTEM ANALYSIS AND DESIGN
COURSE NO. : ITT4402
DURATION OF EXAM: 3 HOURS

	L	T	P	Theory	Sessional
MARKS	2	1	0	100	50

COURSE OUTCOMES

At the end of the course the student will be able to: -	
CO1	Explain the system development life cycle
CO2	Describe various approaches of system analysis and design
CO3	Demonstrate the understanding of testing and maintenance
CO4	Analyze System Threats and disaster recovery

Detailed Syllabus
Section – A

Systems concept: Definition, Characteristics, Elements and Types of system, System Development life cycle, role and need of System Analyst, System analyst as an agent of change.   **(06 Hrs)**

System Analysis: System planning and initial investigation, information gathering techniques, Feasibility Study – types and its importance, Cost Benefit Analysis – Tools and techniques.   **(06Hrs)**

System Design: Introduction, Methodology, Tools for structured design - Data Flow Diagrams, Flowcharts, Structure Charts-Symbols and types, Decision Tree, Decision Table, Structured English, Data Dictionary, Entity-Relationship Model.   **(08 Hrs)**

Section-B

System Testing and maintenance: Test Plan, Activity network for system testing. Documentation Tools used in SDLC, Testing and validation, Maintenance activities and issues.   **(06 Hrs)**

System Security: Introduction, Threats to System, Control Measures, Disaster Recovery and contingency planning, Audit Trails, Risk Management   **(08 Hrs)**

Case study of the following systems:
Library Management System, University Management System.   **(06 Hrs)**

Books Recommended:
1.   Elements of System Analysis   Marvin Gore and John W. Stubbe.
2.   System Analysis and Design   Thapliyal M.P
3.   Modern Systems Analysis & Design   Hoffer, George and Valacich
4.   SSAD: System Software Analysis and Design   Mehta Subhash and Bangia Ramesh.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

CLASS: 4TH SEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: JAVA PROGRAMMING
COURSE NO. CST3403:
DURATION OF EXAM: 3 HOURS

CREDITS: 3

L	T	P	MARKS	
			External	Internal
2	1	0	100	50

COURSE OUTCOMES

At the end of the course the student will be able to: -

CO1	Understand the concepts of Object-Oriented Programming paradigm and platform portability in Java.
CO2	Apply concepts of Classes, Objects and Methods to tackle real world problems.
CO3	Analyze errors and exceptions by using Exception Handling mechanism.
CO4	Examine the Multithreading techniques by extending Thread class and develop interface, Appletsand Web pages
CO5	Create Graphic User Interface using Abstract Window Toolkit

Detailed Syllabus
Section – A

Java Evolution, And Overview of Java Language: Java History–Features of java, how java different from C and C++, Java and World Wide Web, Web Browser. Java Environment: Java Development kit (JDK), Application Programming Interface (API). Java Programming Structure, Java Tokens, Constants, Variables, Expressions, Decision Making Statements and Looping, Java Statements, Overview of Arrays and Strings, Machine Neutral, Java Virtual Machine (JVM), Command Line Arguments.
(6Hrs)

Arrays and Strings: Arrays, One-Dimensional arrays, Creating an Array, declaration of arrays, initialization of arrays, Two-Dimensional arrays, String arrays, String methods, String Buffer class, Vectors, Wrapper classes.**(4Hrs)**
Classes, Objects and Methods: Introduction, defining a class, creating objects, accessing class members, constructors, methods overloading, static members.
(4Hrs)
Inheritance: Defining a sub class, sub class constructor, multilevel variables, Final classes, and Finalize methods, Abstract methods and classes, visibility control.
(4 Hrs)

Managing Errors and Exceptions: Introduction, Types of Errors-Compile time and Run time errors, Exceptions, Types of Exceptions, Syntax of Exception handling code, Multiple catch statements, using finally statement, Throwing our own exceptions.
(4 Hrs)

Section- B

Multithreaded Programming: Introduction to threads, Creating Threads, Extending the Thread Class, Implementing the Runnable interface, life cycle of a thread, priority of a thread, synchronization, Deadlock.
(6Hrs)

Interfaces and Applet Programming: Introduction, defining interfaces, extending interfaces, implementing interfaces. Introduction, how applet differ from applications, building applet code, applet life cycle, About HTML, designing a web page, passing parameters to applets, getting input from the User.
(6Hrs)

Graphics Programming: Introduction, the Abstract Windowing Toolkit (AWT), frames, event-driven programming, layout managers, panels, canvasses, drawing geometric figures. Creating User Interface: Introduction, describe various user interface Components: button, label, text field, text area, choice, list, check box checkbox group.
(8Hrs)

Books Recommended:
1. Programming with JAVA
2. An Introduction to JAVA Programming
3. The Complete Reference JAVA 2

Balagurusamy TMH
Y.DanielLiangTMH
Herbert Schield TMH

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt fivequestions selecting at least two questions from each section. Use of Calculator is allowed

CLASS: 4ᵀᴴ SEMESTER   CREDITS: 3
BRANCH: INFORMATION TECHNOLOGY
COURSETITLE: MANAGEMENT ACCOUNTING AND
FINANCE
COURSE NO. : HMT7401
DURATION OF EXAM: 3 HOURS

	L	T	P	MARKS Theory	Sessional
	2	1	0	100	50

COURSE OUTCOMES

At the end of the course the student will be able to: -

CO1	Understand the concepts and techniques of accounting and finance
CO2	Understand ,analyzing and interpret basic tools of financial statements.
CO3	Enhance skills in utilizing the accounting and financial information in the process of managerial decision-making and control.
CO4	Gain knowledge about budget control and the concept of marginal costing.

Detailed Syllabus
Section – A

Introduction

Management Accounting-Meaning and Definition, Characteristics, Objectives, Scope, functions, advantages andlimitation.Tools and Techniques of Management Accounting. Management Accountant: functions and duties. Financial Accounting -meaning and functions.   **(8 Hrs)**

Financial Statement Analysis

Introduction-meaning,objective and types of financial statement. Methods of financial statement Analysis-MultistepIncome statement, Horizontal analysis, Common sized analysis, Trend analysis.   **(6Hrs)**

Ratio Analysis

Ratio Analysis- meaning and rationale, advantages and limitations. Types of ratios: Liquidity Ratios,Solvency Ratios, Profitability Ratios, Efficiency Ratios.   **(6Hrs)**

Section – B

Funds Flow and Cash Flow Statement

Meaning of Fund flow statement- Uses of fund flow statement.Difference between Funds Flow Statement andIncome Statement.Meaning of Cash flow statement.Differencebetween Cash Flow Analysis and Funds Flow Analysis.Utility of Cash FlowAnalysis.Limitation of Cash Flow Analysis.   **(8 Hrs)**

Marginal Costing and Break-Even Analysis

Definition and characteristics of Marginal costing, Marginal cost equation, Profit/Volume Ratio, Cost- Volume-Profit Analysis, Break Even Analysis- Algebraic method.   **(6Hrs)**

Budgetary Control

Meaning, purpose and components of effective budget programme, types of budgets, Zero Base Budgeting.   **(6Hrs)**

Books Recommended:

1. Management AccountingR.N Anthony, G.A, Walsh

2. Management Accounting   M.Y Khan, K.P Jain:

3. Management Accounting   R.K. Sharma and Shashi K. Gupta

4. Financial Management   Pandey I.M

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required,to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

CLASS: 4ᵀᴴSEMESTER   **CREDIT: 3**
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: SWAYAM/NPTEL
COURSE CODE: MOC4401

L	T	P	MARKS	
			External	Internal
3	0	0	100	-

The students shall register for a 12 week SWAYAM/NPTEL course offered by IIT Madras, out of the list of courses floated by SWAYAM around the time of commencement of the semester. However, the selected NPTEL course should not be similar to the regular courses offered as a part of the department curriculum. The choice of course needs to be duly endorsed by the Department Academic Committee.

The overall monitoring of the NPTEL course will be under the supervision of the teacher incharge of the department.

The NPTEL/SWAYAM certification course comprises of Assignments (25%) and Proctor Examination (Online examination MCQ's based =75%) conducted at the end of the semester by IIT Madras as per the schedule.

The marks obtained by the students in the NPTEL/SWAYAM certification course will be tabulated by the concerned department.

NOTE: - *In case the student does not pass the certification exam or remains absent in the proctored examination, no certificate will be given to the candidate by NPTEL and the student will be deemed to have failed in that course. The student will have to register again for the next semester NPTEL course and pass the examination along with a certificate.*

CLASS: 4ᵀᴴ SEMESTER   CREDIT: 1.5
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: DATA STRUCTURES LAB
COURSE NO. : CSP3411   MARKS

L	T	P	External	Internal
0	0	3	-	75

COURSE OUTCOMES

After Completion of this course the student will be able to: -

CO1	Implement basic operations on Stacks, Queues, Linked list, Trees and Graphs
CO2	Able to use various Data Structures in Problem Solving.
CO3	Implement various sorting and searching techniques.

Lab Experiments:

Experiment 1   Write a program to check if expression is correctly parenthesized using Stacks

Experiment 2   Write a program to evaluate Postfix Expression

Experiment 3   Write a program to convert Infix Expression to its corresponding Postfix an Prefix

Experiment 4   Write a program to convert Prefix Expression to Postfix

Experiment 5   Write a program to implement Circular Queue Operations

Experiment 6   Write a program to implement Priority Queue Operations

Experiment 7   Write a program to implement Ordered Linked List

Experiment 8   Write a program to add Polynomials using Single Linked List

Experiment 9   Write a program to implement operations on Doubly Linked List

Experiment 10   Write a program to find the duplicate numbers in a given list using Binary Tree

Experiment 11   Write a program to Sort a list of numbers using Binary Search Tree

Experiment 12   Write a program to implement operations on Threaded Binary Trees

Experiment 13   Write a program to implement Quick Sort algorithm

Experiment 14   Write a program to implement Shell Sort algorithm

Experiment 15   Write a program to implement Merge Sort algorithm

NOTE: Additional Lab experiments/practicals will be performed based on the course contents requirements.

CLASS: 4ᵀᴴSEMESTER   **CREDIT: 1.5**
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: PRINCIPLES OF OPERATING SYSTEM   **MARKS**
LAB
COURSE NO. : ITP4411

L	T	P	External	Internal
0	0	3	-	75

	COURSE OUTCOMES
After Completion of this course the student will be able to: -	
CO1	Implement scheduling algorithms SJF,FIFS, ROUND ROBIN
CO2	Implement paging and segmentation
CO3	Implement banker's algorithm for deadlock evidence

Lab Experiments:

Do using Assembly/C Programming

Experiment 1	Scheduling Algorithm
Experiment2	First come first serve (FIFS)
Experiment3	Shortest job first (SJF)
Experiment4	Round Robin scheduling
Experiment5	First Fit Memory Management Technique
Experiment6	Best-Fit
Experiment7	Banker's Algorithm for Deadlock Evidence
Experiment8	Paging
Experiment9	Segmentation
Experiment10	Disk Scheduling Algorithm

NOTE: Additional Lab experiments/practicals will be performed based on the course contents requirements.

CLASS: 4THSEMESTER
BRANCH: INFORMATION TECHNOLOGY
COURSE TITLE: JAVA PROGRAMMING LAB.
COURSE NO. : CSP3413

CREDIT: 1

MARKS

L	T	P	External	Internal
0	0	2	-	50

COURSE OUTCOMES

After Completion of this course the student will be able to: -

CO1	Understand various Java Tokens, Constants, Variables, Expressions, Decision Making and Looping Statements in java.
CO2	Implement the concepts for creating Arrays and Strings objects in java.
CO3	Implement the concept of constructor, Destructor, Static member's method overloading and multithreading in java.
CO4	Manage Errors and Exceptions using Exception handling mechanism and code to implement interfaces and applets.
CO5	Design window frame using various GUI components like Buttons, Text fields, menu, check list and check boxes.

Lab Practicals:

Practical 1	WAP To use different arithmetic operation in java.
Practical 2	WAP To demonstrate wrapper class in java.
Practical 3	WAP to perform manipulation on strings in java.
Practical 4	WAP to demonstrate single inheritance in java.
Practical 5	WAP to demonstrate multiple inheritance using interface in java
Practical 6	WAP to demonstrate Exception handling in java
Practical 7	WAP to check whether the entered amount is is sufficient or not ,if not raise an exception in java
Practical 8	WAP to demonstrate threads in java.
Practical 9	WAP to demonstrate APPLET in java.
Practical 10	WAP to demonstrate event handling in java.

NOTE: Additional Lab experiments/practicals will be performed based on the course contents requirements.