BCA
First Year
Semester-I

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-I	Language – Tamil	3	6
Part-II	English	3	6
Part-III	CC1Python Programming	5	5
	CC2Python LAB	5	5
	EC1 Discrete Mathematics I	3	4
	SEC-1 Fundamentals of Information Technology	2	2
Part-IV	FC Structured Programming Language in C	2	2
		23	**30**

Semester-II

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-I	Language – Tamil	3	6
Part-II	English	3	6
Part-III	CC3 Object Oriented Programming concepts Using C++	5	5
	CC4 C++ Programming Lab	5	5
	EC2 Optimization techniques	3	4
	SEC-2 Introductiom to HTML	2	2
Part-IV	SEC-3 PHP Programming	2	2
		23	**30**

CORE PAPER
FIRST YEAR

SEMESTER - I

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
CC1	PYTHON PROGRAMMING		5	-	-	-	4	25	75	100

Learning Objectives	
LO1	To make students understand the concepts of Python programming.
LO2	To apply the OOPs concept in PYTHON programming.
LO3	To impart knowledge on demand and supply concepts
LO4	To make the students learn best practices in PYTHON programming
LO5	To know the costs and profit maximization

UNIT	Contents	No. of Hours
I	**Basics of Python Programming:** History of Python-Features of Python-Literal-Constants-Variables - Identifiers–Keywords-Built-in Data Types-Output Statements – Input Statements-Comments – Indentation- Operators-Expressions-Type conversions. **Python Arrays:** Defining and Processing Arrays – Array methods.	15
II	**Control Statements:** Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. **Jump Statements:** break, continue and pass statements**.**	15
III	**Functions:** Function Definition – Function Call – Variable Scope and its Lifetime-Return Statement. **Function Arguments**: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments-Recursion. **Python Strings:** String operations- Immutable Strings - Built-in String Methods and Functions - String Comparison. **Modules**: import statement- The Python module – dir() function – Modules and Namespace – Defining our own modules.	15
IV	**Lists:** Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list operations-List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between lists and tuples. **Dictionaries:** Creating, Accessing, Updating and Deleting Elements in a Dictionary – Dictionary Functions and Methods - Difference between Lists and Dictionaries.	15

V	**Python File Handling:** Types of files in Python - Opening and Closing files- Reading and Writing files: write() and writelines() methods- append() method – read() and readlines() methods – with keyword – Splitting words – File methods - File Positions- Renaming and deleting files.	**15**
	TOTAL HOURS	**75**

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	Learn the basics of python, Do simple programs on python, Learn how to use an array.	PO1, PO2, PO3, PO4, PO5, PO6
CO2	Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements.	PO1, PO2, PO3, PO4, PO5, PO6
CO3	Concept of function, function arguments, Implementing the concept strings in various application, Significance of Modules, Work with functions, Strings and modules.	PO1, PO2, PO3, PO4, PO5, PO6
CO4	Work with List, tuples and dictionary, Write program using list, tuples and dictionary.	PO1, PO2, PO3, PO4, PO5, PO6
CO5	Usage of File handlings in Python, Concept of reading and writing files, Do programs using files.	PO1, PO2, PO3, PO4, PO5, PO6

Textbooks

1	ReemaThareja, “Python Programming using problem solving approach”, First Edition, 2017, Oxford University Press.
2	Dr. R. Nageswara Rao, “Core Python Programming”, First Edition, 2017, Dream tech Publishers.

Reference Books

1.	VamsiKurama, “Python Programming: A Modern Approach”, Pearson Education.
2.	Mark Lutz, ”Learning Python”, Orielly.
3.	Adam Stewarts, “Python Programming”, Online.
4.	Fabio Nelli, “Python Data Analytics”, APress.
5.	Kenneth A. Lambert, “Fundamentals of Python – First Programs”, CENGAGE Publication.

Web Resources

1.	https://www.programiz.com/python-programming
2.	https://www.guru99.com/python-tutorials.html
3.	https://www.w3schools.com/python/python_intro.asp
4.	https://www.geeksforgeeks.org/python-programming-language/
5.	https://en.wikipedia.org/wiki/Python_(programming_language)

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**2**	**2**	**3**	**3**	**3**
CO 2	**3**	**2**	**2**	**3**	**2**	**3**
CO 3	**3**	**2**	**2**	**3**	**2**	**2**
CO 4	**3**	**2**	**2**	**3**	**2**	**3**
CO 5	**3**	**2**	**2**	**3**	**3**	**3**
Weightage of course contributed to each PSO	15	10	10	15	13	14

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
CC2	PYTHON LAB		-	-	4	-	4	25	75	100

Course Objectives:

1. Be able to design and program Python applications.
2. Be able to create loops and decision statements in Python.
3. Be able to work with functions and pass arguments in Python.
4. Be able to build and package Python modules for reusability.
5. Be able to read and write files in Python.

LAB EXERCISES	Required Hours
1. Program using variables, constants, I/O statements in Python. 2. Program using Operators in Python. 3. Program using Conditional Statements. 4. Program using Loops. 5. Program using Jump Statements. 6. Program using Functions. 7. Program using Recursion. 8. Program using Arrays. 9. Program using Strings. 10. Program using Modules. 11. Program using Lists. 12. Program using Tuples. 13. Program using Dictionaries. 14. Program for File Handling.	**60**

Course Outcomes

On completion of this course, students will

CO1	Demonstrate the understanding of syntax and semantics of
CO2	Identify the problem and solve using PYTHON programming techniques.
CO3	Identify suitable programming constructs for problem solving.
CO4	Analyze various concepts of PYTHON language to solve the problem in an efficient way.
CO5	Develop a PYTHON program for a given problem and test for its correctness.

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6

CO 1	**2**	**2**	**2**	**2**	**3**	**2**
CO 2	**2**	**1**	**3**	**2**	**-**	**2**
CO 3	**3**	**3**	**1**	**1**	**1**	**2**
CO 4	**2**	**3**	**3**	**1**	**-**	**1**
CO 5	**3**	**2**	**3**	**1**	**1**	**-**
Weightage of course contributed to each PSO	12	11	12	7	5	7

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
FC	**Structured Programming Language in C**	FC	Y	-	-	-	2	2	25	75	100

Course Objective	
LO1	To familiarize the students with the Programming basics and the fundamentals of C, Datatypes in C, Mathematical and logical operations.
LO2	To understand the concept using if statements and loops
LO3	This unit covers the concept of Arrays
LO4	This unit covers the concept of Functions
LO5	To understand the concept of implementing pointers.

UNIT	Details	No. of Hours	Course Objectives
I	**Overview of C**: Importance of C, sample C program, C program structure, executing C program. Constants, Variables, and Data Types: Character set, C tokens, keywords and identifiers, constants, variables, data types, declaration of variables, Assigning values to variables--- Assignment statement, declaring a variable as constant, as volatile. Operators and Expression.	6	CO1
II	**Decision Making and Branching**: Decision making with If, simple IF, IF ELSE, nested IF ELSE , ELSE IF ladder, switch, GOTO statement.**Decision Making and Looping**: While, Do-While, For, Jumps in loops.	6	CO2
III	**Arrays**: Declaration and accessing of one & two-dimensional arrays, initializing two-dimensional arrays, multidimensional arrays.	6	CO3
IV	**Functions**: The form of C functions, Return values and types, calling a function, categories of functions, Nested functions, Recursion, functions with arrays, call by value, call by reference, storage classes-character arrays and string functions	6	CO4
V	**Pointers:** definition, declaring and initializing pointers, accessing a variable through address and through pointer, pointer expressions, pointer increments and scale factor, pointers and arrays, pointers and functions, pointers and structures.	6	CO5
	Total	**30**	

Course Outcomes		Programme Outcome
CO	On completion of this course, students will	
1	Remember the program structure of C with its syntax and semantics	PO1,PO3,PO5
2	Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	PO2,PO3,PO6,PO7
3	Apply the programming principles learnt in real-time problems	PO3,PO4,PO7
4	Analyze the various methods of solving a problem and choose the best method	PO4,PO5,PO6
5	Code, debug and test the programs with appropriate test cases	PO7,PO8
Text Book		
1	E. Balagurusamy, Programming in ANSI C, Fifth Edition, Tata McGraw-Hill, 2010.	
Reference Books		
1.	Byron Gottfried, Schaum's Outline Programming with C, Fourth Edition, Tata McGraw-Hill, 2018.	
2.	Kernighan and Ritchie, The C Programming Language, Second Edition, Prentice Hall, 1998	
3.	YashavantKanetkar, Let Us C, Eighteenth Edition, BPB Publications,2021	
Web Resources		
1.	https://codeforwin.org/	
2.	https://www.geeksforgeeks.org/c-programming-language/	
3.	http://en.cppreference.com/w/c	
4.	http://learn-c.org/	
5.	https://www.cprogramming.com/	

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**1**	**2**	**2**	**2**	**2**	**-**
CO 2	**2**	**2**	**2**	**2**	**-**	**2**
CO 3	**3**	**2**	**2**	**1**	**1**	**-**
CO 4	**3**	**2**	**2**	**1**	**-**	**1**
CO 5	**1**	**2**	**2**	**2**	**2**	**3**
Weightage of course contributed to each PSO	7	10	10	18	15	6

S-Strong-3 M-Medium-2 L-Low-1

ElectiveCourse:EC1DiscreteMathematics

Subject Code	SubjectName	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
	DISCRETEMATHEMATICS	**Elective**	4	-	-	I	3	25	75	100

COURSEOUTCOMES

OnSuccessfulcompletionof thecourse,thestudentwillbeableto

CO1:Torecallbasicconceptsforclearunderstandingof mathematicalprinciples

CO2:Toexplainpracticalproblems.

CO3:Toconstructmatricesusingdiscretemathematics

CO4:Toanalyzetechniquestodrawgraphusingmathematics

CO5:Todesigngraphsusingtherepresentations

Unit–I:RELATIONS **12 Hours**

Introduction to Relations – Binary relation – Classification of Relations – Composition ofRelations – Inverse of Relation – Closure operation on Relations – Matrix representation ofRelation.

Unit–II:FUNCTIONS **12 Hours**

Introduction to Functions – Addition and Multiplication of Functions - Classifications ofFunctions – Compositionof Function– InverseFunction.

Unit–III:MATHEMATICALLOGIC **12 Hours**

Introduction – Statement (Propositions) – Laws of Formal Logic –Basic Set of Logicaloperators/operations - Propositions and Truth Tables – Algebra Propositions - TautologiesandContradictions.

Unit–IV:MATRIXALGEBRA **12 Hours**

Introduction – Definition of a Matrix - Types of Matrices – Operations on Matrices – RelatedMatrices–TransposeofaMatrix –SymmetricandSkew-symmetricMatrices – Determinant of a Matrix – Typical Square Matrices – Adjointand Inverse of a Matrix – Singular and Non-singular Matrices – Adjoint of a SquareMatrix–Propertiesof AdjointofaMatrix–Propertiesof Inverseof aMatrix.

Unit–V:GRAPH **12 Hours**

Introduction – Graph and Basic Terminologies – Types of Graphs – Sub Graph andIsomorphicGraph –OperationsonGraphs –Representation of Graph.

TextBook:

DISCRETEMATHEMATICS,SwapanKumarChakrabortyandBikashKantiSarkar,OXFORD UniversityPress.

ReferenceBooks:

1. DISCRETEMATHEMATICS,ThirdEdition,SeymourLipschutzandMarcLarsLipson,Tata McGrawHillEducationPrivateLimited.
2. DiscreteMathematicalStructureswithApplicationstoComputerSciencebyJ.P.Tremblay,R.ManoharTMH edition
3. https://www.tutorialspoint.com›discrete_mathematics

MappingwithProgrammeOutcomes:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	3	3	3	3
CO2	3	3	3	3	3	3
CO3	3	3	3	3	3	3
CO4	3	3	3	3	2	3
CO5	3	3	2	3	3	2
Weightage of coursecontributed to eachPSO	15	15	14	15	14	14

S-Strong-3 M-Medium-2L-Low-1

Subject Code								CIA	External	Total
	FUNDAMENTALSOFINFORMATIONTECHNOLOGY	SpecificElective	2	-	-	I	2	25	75	100

LearningObjectives	
LO1	Understandbasicconceptsandterminologyofinformationtechnology.
LO2	Haveabasic understandingofpersonalcomputersandtheiroperation
LO3	Be abletoidentifydata storageanditsusage
LO4	Getgreatknowledgeofsoftwareandits functionalities
LO5	Understandaboutoperating systemand theiruses

UNIT	Contents	No.Of. Hours
I	**IntroductiontoComputers**-GenerationsofComputer– DataandInformation – Components of Computer – Software – Hardware – InputDevices-OutputDevices—Types of OperatingSystem.	**6**
II	**MS Word**: Introduction –Elements of Window– Files, Folders andDirectories – Text Manipulating: Cut, Copy, Paste, Drag and Drop – TextFormatting: Font – Style, Size, Face and Colors (Both foreground andbackground)–Alignment-BulletsandNumbering-Headerandfooter-watermark –inserting objects (images, other application document) – Tablecreation– Mailmerge.	**6**
III	**MsExcel**:Introduction–Insertingrowsandcolumns– Sizingrowsandcolumns–Implementingformulas–Generatingseries-Functionsinexcel –CreationofChart–Insertingobjects–Filter–Sorting–Insertingworksheet.	**6**
IV	**MSPowerPoint**:Introduction–SlidesManipulation(Insertingnew,Copy, paste, delete and duplicate slides) – Slide show– Types of Views – TypesofAnimations–InsertingObjects–Implementingmultimedia (VideoandAudio) –Templates(Built-inandUser-Defined).	**6**
V	**Internet**: Introduction to Internet and Intranet – Services of Internet - Domain Name – URL – Browser – Types of Browsers – Search Engine - E-Mail – Basic Components of E-Mail –.How to send group mail. **E-Commerce**:DigitalSignature–DigitalCurrency–Onlineshoppingand transaction.	**6**
	TOTALHOURS	**30**

CourseOutcomes		**Programme Outcomes**
CO	Oncompletionof thiscourse,studentswill	
CO1	Learnthebasicsofcomputer,Constructthestructureoftherequiredthingsin computer, learn how to useit.	PO1, PO2,PO3, PO4,PO5, PO6

CO2	Developorganizationalstructureusingforthedevicespresentcurrentlyunder inputoroutputunit.	PO1, PO2,PO3, PO4,PO5, PO6
CO3	ConceptofstoringdataincomputerusingtwoheadernamelyRAMandROMwithdifferenttypesofROMwithadvancementinstorage basis.	PO1,PO2, PO3, PO4,PO5, PO6
CO4	Workwithdifferentsoftware,Write programinthe softwareand applicationsofsoftware.	PO1,PO2, PO3, PO4,PO5, PO6
CO5	Usage of Operating system in information technology which really actsasainterpreterbetweensoftwareand hardware.	PO1, PO2,PO3, PO4, PO5,PO6

Textbooks

1	AnoopMathew,S.KavithaMurugeshan(2009),"FundamentalofInformationTechnology",MajesticBooks.
2	AlexisLeon,Mathews Leon," Fundamentalof InformationTechnology",2nd Edition.
3	S.KBansal,"Fundamentalof InformationTechnology".

ReferenceBooks

1.	BhardwajSushilPuneetKumar,"FundamentalofInformationTechnology"
2.	GGWILKINSON,"FundamentalsofInformationTechnology",Wiley-Blackwell
3.	ARavichandran,"FundamentalsofInformationTechnology",KhannaBookPublishing

WebResources

1.	https://testbook.com/learn/computer-fundamentals
2.	https://www.tutorialsmate.com/2020/04/computer-fundamentals-tutorial.html
3.	https://www.javatpoint.com/computer-fundamentals-tutorial
4.	https://www.tutorialspoint.com/computer_fundamentals/index.htm
5.	https://www.nios.ac.in/media/documents/sec229new/Lesson1.pdf

MappingwithProgrammeOutcomes:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	3	2	2	1	1
CO2	3	2	3	2	3	3
CO3	3	2	2	2	2	3
CO4	2	3	3	3	3	1
CO5	3	3	3	3	3	2
Weightageofcoursecontributedtoeach PSO	13	13	13	12	12	10

S-Strong-3 M-Medium-2L-Low-1

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**2**	**1**	**-**	**-**	**1**
CO 2	**2**	**2**	**2**	**1**	**-**	**-**
CO 3	**3**	**1**	**1**	**-**	**1**	**-**
CO 4	**1**	**2**	**1**	**2**	**2**	**1**
CO 5	**3**	**2**	**1**	**2**	**3**	**2**
Weightage of course contributed to each PSO	12	9	6	5	6	4

S-Strong-3 M-Medium-2 L-Low-1

SEMESTER II

Title of the Course/ Paper	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
CC3	**OBJECT ORIENTED PROGRAMMING CONCEPTS USING C++**	Core	Y	-	-	-	4	5	25	75	100

Course Objective	
LO1	Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects
LO2	Understand dynamic memory management techniques using pointers, constructors, destructors, etc
LO3	Describe the concept of function overloading, operator overloading, virtual functions and polymorphism
LO4	Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming
LO5	Demonstrate the use of various OOPs concepts with the help of programs

UNIT	**Details**	**No. of Hours**
I	Introduction to C++ - key concepts of Object-Oriented Programming – Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. **Control Structures** : Decision Making and Statements : If ..else, jump, goto, break, continue, Switch case statements - Loops in C++ :for, while, do - Functions in C++ - inline functions – Function Overloading.	15
II	**Classes and Objects**: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.	15
III	**Operator Overloading:** Overloading unary, binary operators – Overloading Friend functions –type conversion – **Inheritance:** Types of Inheritance – Single, Multilevel, Multiple, Hierarchal,Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.	15
IV	Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes andBase classes – Arrays – Characteristics – array of classes – Memory models – new and deleteoperators – dynamic object –	15

	Binding, Polymorphism and Virtual Functions.	
V	Files – File stream classes – file modes – Sequential Read / Write operations – Binary and ASCIIFiles – Random Access Operation – Templates – Exception Handling - String – Declaring andInitializing string objects – String Attributes – Miscellaneous functions .	15
	Total	**75**

Course Outcomes		**Programme Outcome**
CO	Upon completion of the course the students would be able to:	
1	Remember the program structure of C with its syntax and semantics	PO1,PO6
2	Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	PO2
3	Apply the programming principles learnt in real-time problems	PO4 ,PO7
4	Analyze the various methods of solving a problem and choose the best method	PO6
5	Code, debug and test the programs with appropriate test cases	PO7,PO8

Text Book

1	E. Balagurusamy, “Object-Oriented Programming with C++”, TMH 2013, 7th Edition.

Reference Books

1.	Ashok N Kamthane, “Object-Oriented Programming with ANSI and Turbo C++”, Pearson Education 2003.
2.	Maria Litvin& Gray Litvin, “C++ for you”, Vikas publication 2002.

Web Resources

1.	https://alison.com/course/introduction-to-c-plus-plus-programming

Title of the Course/ Paper	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
CC4	**C++ PROGRAMMING LAB**	Core	-	-	Y	-	4	5	25	75	100

Course Objective	
LO1	Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects
LO2	Understand dynamic memory management techniques using pointers, constructors, destructors, etc
LO3	Describe the concept of function overloading, operator overloading, virtual functions and polymorphism
LO4	Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming
LO5	Demonstrate the use of various OOPs concepts with the help of programs

S.No	Details	No. of Hours
1	Write a C++ program to demonstrate function overloading, Default Arguments and Inlinefunction.	
2	Write a C++ program to demonstrate Class and Objects	
3	Write a C++ program to demonstrate the concept of Passing Objects to Functions	
4	Write a C++ program to demonstrate the Friend Functions.	
5	Write a C++ program to demonstrate the concept of Passing Objects to Functions	
6	Write a C++ program to demonstrate Constructor and Destructor	
7	Write a C++ program to demonstrate Unary Operator Overloading	
8	Write a C++ program to demonstrate Binary Operator Overloading	

9	Write a C++ program to demonstrate: • Single Inheritance • Multilevel Inheritance • Multiple Inheritance • Hierarchical Inheritance • Hybrid Inheritance	
10	Write a C++ program to demonstrate Virtual Functions.	
11	Write a C++ program to manipulate a Text File.	
12	Write a C++ program to perform Sequential I/O Operations on a file.	
13	Write a C++ program to find the Biggest Number using Command Line Arguments	
14	Write a C++ program to demonstrate Class Template	
15	Write a C++ program to demonstrate Function Template.	
16	Write a C++ program to demonstrate Exception Handling.	

Course Outcomes		**Programme Outcome**
CO	Upon completion of the course the students would be able to:	
1	Remember the program structure of C with its syntax and semantics	PO1,PO6
2	Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	PO2
3	Apply the programming principles learnt in real-time problems	PO4 ,PO7
4	Analyze the various methods of solving a problem and choose the best method	PO6
5	Code, debug and test the programs with appropriate test cases	PO7,PO8

Text Book

1	E. Balagurusamy, “Object-Oriented Programming with C++”, TMH 2013, 7th Edition.

eference Books	
1.	Ashok N Kamthane, “Object-Oriented Programming with ANSI and Turbo C++”, Pearson Education 2003.
2.	Maria Litvin& Gray Litvin, “C++ for you”, Vikas publication 2002.
Web Resources	
1.	https://alison.com/course/introduction-to-c-plus-plus-programming

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**3**	**3**	**3**	**1**	**2**
CO 2	**2**	**3**	**3**	**3**	**1**	**2**
CO 3	**2**	**3**	**3**	**3**	**1**	**2**
CO 4	**2**	**3**	**3**	**3**	**1**	**2**
CO 5	**2**	**3**	**3**	**3**	**1**	**2**
Weightage of course contributed to each PSO	11	15	15	15	5	10

S-Strong-3 M-Medium-2 L-Low-1

EC2:ElectiveCourse**OPTIMIZATIONTECHNIQUES**

Courseobjectives:

1. Toapplyvariousoptimizationtechniquesfordecisionmaking.
2. Tointroducetheuseofvariablesforformulatingcomplexmathematicalmodelsinmanagement,scienceandindustrialapplications

CourseOutcome:

Onsuccessfulcompletionofthecourse,thelearnerswillbeabletoCO1.Formulateandsolve LinearProgrammingProblems.

CO2.AnalyzetheusageofAssignmentProblems.CO3.Evaluate TransportationModels.

CO4.ApplyPERTandCPMtechniquestofindtheoptimalsolution.

UNITI 12hours

INTRODUCTION OPERATIONS RESEARCH

TheNatureandMeaningofOR–Management–ApplicationsofOR – ModelinginOR–Generalmethodsfor solving OR models– Scope ofOR – Advantages and disadvantages of OR

UNIT II 12hours

LINEAR PROGRAMMING PROBLEM

LinearProgrammingProblem:FormulationofLPproblems– GraphicalsolutionofLPproblems –General formulation of LPP – Slack andSurplusvariables–StandardformofLPP

UNITIII 12hours

ASSIGNMENTPROBLEMS

AssignmentProblem:Mathematicalformulation–Hungarianmethod– Unbalancedassignmentproblem–Varioustypes

UNITIV 12hours

TRANSPORTATIONPROBLEMS

Transportation Model: Mathematical formulation – Matrix form–Methods forfinding Initial Basic Feasible solution and Optimal solution.

UNITV **12hours**

PERTANDCPMTECHNIQUES

PERTandCPMTechniques:BasicSteps–NetworkDiagramrepresentation– RulesfordrawingNetworkDiagram – LabelingFulkerson'sI–JRule– TimeEstimatesandCritical Path in NetworkAnalysis – Examples on optimum duration and minimum duration cost –PERT.

CO-PO–PSOMapping

OPTIMIZATIONTECHNIQUES											
CO	PO					PSO					COGNITIVE LEVEL
	1	2	3	4	5	1	2	3	4	5	
CO1	S	S	S	M	S	S	S	M	S	S	K-2
CO2	S	S	M	S	S	S	S	S	S	S	K-1
CO3	S	S	M	S	S	S	S	S	S	S	K-3
CO4	S	S	M	S	S	S	S	S	S	S	K-5
CO5	S	S	M	S	S	S	S	S	S	S	K–6

StronglyCorrelated–S,ModeratelyCorrelated–M,WeeklyCorrelated-L

TEXTBOOK

S.D.Sharma,"OperationsResearch",TenthEdition,Pearson,2017.

REFERENCEBOOKS

1. HamdyATaha,"OperationsResearch",NinthEdition,Pearson, 2016.
2. V.Sundaresan,K.S.GanapathySubramanian,K. Ganesan,"ResourceManagementTechniques", NinthEdition, A.R.Publications,2015.

Subject Code	SubjectName	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
	INTRODUCTIONTO HTML	Specific Elective	2	-	-		2	25	75	100

LearningObjectives	
LO1	Insertagraphicwithinawebpage.
LO2	Createalinkwithina webpage.
LO3	Createatable withina web page.
LO4	Insertheadinglevelswithinawebpage.
LO5	Insertorderedandunorderedlistswithinawebpage.Create awebpage.

UNIT	**Contents**	**No. Of. Hours**
I	**Introduction:**WebBasics:WhatisInternet–Webbrowsers–WhatisWebpage–HTMLBasics:Understandingtags.	**6**
II	Tags forDocumentstructure(HTML,Head,BodyTag).Blockleveltextelements:Headingsparagraph(<p>tag)–Fontstyleelements:(bold,italic,font,small,strong,strike,bigtags)	**6**
III	Lists:Typesoflists:Ordered,Unordered–NestingLists–Othertags:Marquee,HR,BR-UsingImages–CreatingHyperlinks.	**6**
IV	Tables:CreatingbasicTable,Tableelements,Caption–Tableandcellalignment–Rowspan,Colspan–Cellpadding.	**6**
V	Frames:Frameset–TargetedLinks–Noframe–Forms:Input,Textarea,Select,Option.	**6**
	TOTALHOURS	**30**

CourseOutcomes		**Programme Outcomes**
CO	Oncompletionof thiscourse,studentswill	
CO 1	Knows the basic concept in HTMLConceptofresourcesin HTML	PO1, PO2,PO3, PO4,PO5, PO6
CO 2	Knows Design concept.ConceptofMeta Data Understandtheconceptof savethefiles.	PO1, PO2,PO3, PO4,PO5, PO6
CO 3	Understand the page formatting.Conceptoflist	PO1,PO2, PO3, PO4,PO5, PO6

CO 4	CreatingLinks. Knowtheconceptofcreating linkto emailaddress	PO1, PO2,PO3, PO4, PO5,PO6
CO 5	Concept of adding imagesUnderstandthetable creation.	PO1, PO2,PO3, PO4, PO5,PO6

	Textbooks
1	"MasteringHTML5andCSS3MadeEasy",TeachUCompInc.,2014.
2	**ThomasMichaud,"FoundationsofWebDesign:IntroductiontoHTML&CSS"**
	WebResources
1.	https://www.teachucomp.com/samples/html/5/manuals/Mastering-HTML5-CSS3.pdf
2.	https://www.w3schools.com/html/default.asp

MappingwithProgrammeOutcomes:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	3	3	3	3
CO2	3	3	2	3	3	3
CO3	2	3	3	3	3	3
CO4	3	3	3	3	3	3
CO5	3	3	3	2	3	3
Weightageof coursecontributedtoeachPSO	14	15	14	14	15	15

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	SubjectName	Category	L	T	P	S	Credits	Inst.Hours	Marks		
									CIA	External	Total
	PHPPROGRAMMING	Specific Elective	Y				2	2	25	75	100
CourseObjective											
LO1	Toprovide the necessaryknowledge onbasicsofPHP.										
LO2	Todesignanddevelopdynamic,database-drivenwebapplicationsusingPHPversion.										
LO3	Togetanexperienceonvariouswebapplicationdevelopmenttechniques.										
LO4	Tolearnthe necessaryconceptsforworkingwiththe filesusingPHP.										
LO5	Togeta knowledge onOOPSwithPHP.										
UNIT	**Details**							**No. ofHours**	**CourseObjectives**		
I	IntroductiontoPHP-BasicKnowledgeofwebsites-IntroductionofDynamicWebsite-IntroductiontoPHP-ScopeofPHP–XAMPPandWAMPInstallation							6	CO1		
II	PHPProgrammingBasics-SyntaxofPHP-EmbeddingPHPinHTML -Embedding HTML in PHP.							6	CO2		
	IntroductiontoPHPVariable-UnderstandingDataTypes-UsingOperators-UsingConditionalStatements-If(),elseif()andelseifconditionStatement.										
III	Switch() Statements -Using the while() Loop -Using the for() LoopPHPFunctions. PHPFunctions-CreatinganArray-ModifyingArrayElements-ProcessingArrayswithLoops-GroupingFormSelectionswith Arrays-UsingArrayFunctions.							6	CO3		
IV	PHPAdvancedConcepts-ReadingandWritingFiles-ReadingDatafromaFile.							6	CO4		
V	ManagingSessionsandUsingSessionVariables-DestroyingaSession-StoringDatainCookies-SettingCookies.							6	CO5		
	Total							**30**			

CourseOutcomes		Programme Outcomes
CO	Oncompletionof thiscourse,studentswill	
1	Write PHPscriptstohandle HTMLforms	PO1,PO4,PO6,PO8.
2	Write regular expressions including modifiers,operators,and metacharacters.	PO2,PO5,PO7.
3	CreatePHPPrograusingtheconceptofarray.	PO3,PO6,PO8.
4	Create PHP programs that use various PHPlibraryfunctions	PO2,PO3,PO5,PO8.
5	Manipulatefilesanddirectories.	PO3,PO5,PO6.
Text Book		
1	Head First PHP & MySQL: A Brain-Friendly Guide-Oreilly2009-LynnBeighleyandMichaelMorrison.	
2	TheJoyofPHP:ABeginner'sGuidetoProgrammingInteractiveWebApplications withPHPand MySQL-Alan Forbes	
ReferenceBooks		
1.	PHP:The Complete Reference-StevenHolzner, McGraw Hill, 2008.	
2.	HTML 5 Black Book -Dreamtech Press2016, 2nd Edition.	
WebResources		
1.	ReferMOOCCourseslikeNPTELandSWAYAM	
2.	https://www.w3schools.com/php/default.asp	

MappingwithProgrammeOutcomes:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	**3**	**3**	**1**	**1**	**-**	**1**
CO2	**2**	**-**	**1**	**1**	**2**	**1**
CO3	**3**	**3**	**1**	**1**	**-**	**1**
CO4	**1**	**3**	**2**	**1**	**-**	**1**
CO5	**3**	**2**	**1**	**1**	**-**	**1**
Weightageofcoursecontributedtoeach PSO	12	11	6	5	2	5

S-Strong-3 M-Medium-2L-Low-1