

B.Sc. Software System

Syllabus

AFFILIATED COLLEGES

Program Code:26L

2021–2024 Batch



BHARATHIAR UNIVERSITY

**(A State University, Accredited with "A" Grade by
NAAC, Ranked 13th among Indian Universities by MHRD-
NIRF,**

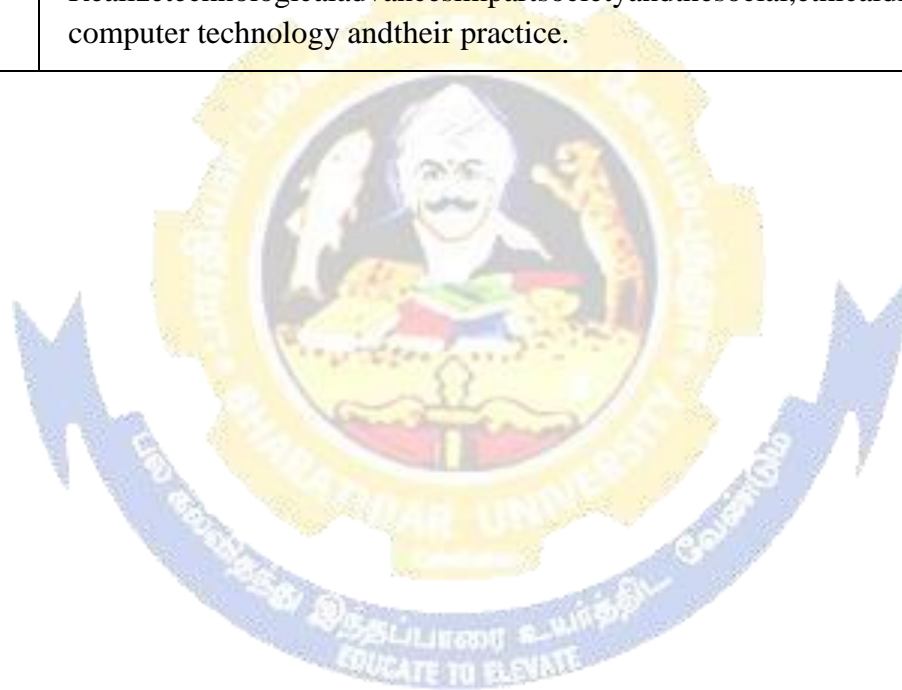
World Ranking: Times -801-1000, Shanghai-901-1000, URAP-982)

Coimbatore - 641 046 Tamil Nadu India

Program Educational Objectives (PEOs)	
The B.Sc. Software System program describe accomplishments that graduates are expected to attain within five to seven years after graduation	
1	To apply software to design, principles, techniques and develop difficult and easy accessible software systems
2	To apply and acquire knowledge in various tools and techniques in software design and implementation to meet the industry requirements
3	To develop the graduates to pursuing higher education, apply new software technologies in research or entrepreneurs
4	To enrich the learner to effective communication, leadership quality and professional development
5	To stimulate the graduates to contribute nation build activity towards social responsibility, professional ethics and human values in-built in the discipline



Program Specific Outcomes (PSOs)	
After the successful completion of B.Sc. Software System program, the students are expected to	
1	Ability to apply fundamental principles in various software system applications
2	Acquired knowledge in software tools and implementation challenges in business varying technologies
3	Ability to apply continuous learning and implement changing technology for successful career
4	Develop to exhibit professionally or team leader or entrepreneur
5	Realize technological advances impart society and the social, ethical difficulties of computer technology and their practice.



Program Outcomes (POs)	
On successful completion of the B.Sc. SOFTWARE SYSTEM program	
PO1	Disciplinary knowledge: Capable to apply the knowledge of mathematics, algorithmic principles and computing fundamentals in the modeling and design of computer based systems of varying complexity.
PO2	Scientific reasoning/ Problem analysis: Ability to critically analyze, categorizes, formulate and solve the problems that emerges in the field of computer science.
PO3	Problem solving: Able to provide software solutions for complex scientific and business related problems or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations.
PO4	Environment and sustainability: Understand the impact of software solutions in environmental and societal context and strive for sustainable development.
PO5	Moderntool usage: Use contemporary techniques, skills and tools necessary for integrated solutions.
PO6	Ethics: Function effectively with social, cultural and ethical responsibility as an individual or as a team member with positive attitude.
PO7	Cooperation/Team Work: Function effectively as a member or leader on multidisciplinary teams to accomplish a common objective.
PO8	Communication Skills: An ability to communicate effectively with diverse types of audience and also able to prepare and present technical documents to different groups.
PO9	Self-directed and Life-long Learning: Graduates will recognize the need for self-motivation to engage in lifelong learning to be in par with changing technology.
PO10	Enhance the research culture and uphold the scientific integrity and objectivity

BHARATHIARUNIVERSITY::COIMBATORE641046

B.Sc.SoftwareSystem(CBCSPATTERN)

(Forthestudentsadmittedfromtheacademicyear2021-2022andonwards)

SchemeofExamination

Part	TitleoftheCourse	Hours/ Week	Examination				Credits
			Duration inHours	MaximumMarks			
				CIA	CEE	Total	
SemesterI							
I	Language-I	6	3	50	50	100	4
II	English-I	6	3	50	50	100	4
III	Core1:ComputingFundamentalsandC Programming	4	3	50	50	100	4
III	Core2:DigitalFundamentalsandComputer Architecture	4	3	50	50	100	4
III	CoreLab1:ProgrammingLab-C	3	3	50	50	100	4
III	Allied1:Mathematical StructuresforComputer Science	5	3	50	50	100	4
IV	EnvironmentalStudies*	2	3	-	50	50	2
Total		30		300	350	650	26
SemesterII							
I	Language–II	6	3	50	50	100	4
II	English–II	6	3	50	50	100	4
III	Core3:C++Programming	5	3	50	50	100	4
III	CoreLab2:ProgrammingLab-C++	4	3	50	50	100	4
III	CoreLab3:InternetBasics	2	3	25	25	50	2
III	Allied2:DiscreteMathematics	5	3	50	50	100	4
IV	ValueEducation– HumanRights*	2	3	-	50	50	2
Total		30		275	325	600	24
SemesterIII							
III	Core4:DataStructures	6	3	50	50	100	4
III	Core5:JavaProgramming	6	3	50	50	100	4
III	CoreLab4:Programming Lab -Java	5	3	50	50	100	4
III	Allied3:ComputerBased OptimizationTechniques	6	3	50	50	100	4
III	SkillbasedSubject1:WAP&XML	5	3	30	45	75	3
IV	Tamil**/ AdvancedTamil*(OR)Non-Major elective-I(YogaforHumanExcellence)*/ Women’s Rights*	2	3	-	50	50	2
Total		30		230	295	525	21
SemesterIV							
III	Core6:SystemSoftwareandOperatingSystem	6	3	50	50	100	4
III	Core7:LinuxandShellProgramming	5	3	50	50	100	4
III	CoreLab5:LinuxandShellProgramming Lab	4	3	25	25	50	2
	Naan Muthalvan – Skill Course Office Fundamentals - Lab <a href="http://kb.naanmudhalvan.in/Bharathiar
University (BU)">http://kb.naanmudhalvan.in/Bharathiar University (BU)	3		25	25	50	2
III	Allied4:BusinessAccounting	6	3	50	50	100	4
III	Skillbasedsubject2Lab:XML Lab	4	3	30	45	75	3
IV	Tamil**/Advanced Tamil* (OR) Non- majorelective-II(GeneralAwareness*)	2	3	-	50	100	2
Total		30		230	295	525	21

Semester V							
III	Core8: RDBMS&Oracle	6	3	50	50	100	4
III	Core9: VisualBasic	6	3	50	50	100	4
III	CoreLab6: ProgrammingLab –VB&Oracle	6	3	50	50	100	4
III	Elective – I: E-Commerce / Design and analysis of Algorithms/Web Technology	6	3	50	50	100	4
III	Skill based Subject 3: ASP.NET	6	3	30	45	75	3
Total		30		230	245	475	19
Semester VI							
III	Core10: Graphics&Multimedia	5	3	50	50	100	4
III	Core11: Project Work Lab %	5	-	60	90	150	6
III	CoreLab7: ProgrammingLab –Graphics &Multimedia	5	3	50	50	100	4
III	Elective – II: Computer Networks/ Software Quality Assurance / Management Information Systems	5	3	50	50	100	4
III	Elective – III: Wireless Mobile Communications/Component Technologies/ Mastering LAN & Troubleshooting	5	3	50	50	100	4
III	Skill Based Subject 4: ASP.NET Lab	3	3	30	45	75	3
	Naan Muthalvan-Skill Course Cyber Security @ http://kb.naanmudhalvan.in/images/7/71/Cybersecurity.pdf (or) Machine Learning # http://kb.naanmudhalvan.in/images/1/19/PBL_Google.pdf (or) Android APP Development \$ http://kb.naanmudhalvan.in/images/0/08/Android_App_Dev.pdf	2		25	25	50	2
V	Extension Activities**	-	-	50	-	50	2
Total		30		365	360	725	29
Grand Total				1630	1870	3500	140

- * No Continuous Internal Assessment (CIA). Only University Examinations.
- ** No University Examinations. Only Continuous Internal Assessment (CIA).
- # Govt – Non-Autonomous Colleges, \$ Aided – Non-Autonomous Colleges, @ Self - Financing (Non – Autonomous).
- NaanMudhalvan – skill courses- external 25 marks will be assessed by Industry and internal will be offered by respective course teacher.



Coursecode	Computing Fundamentals and C Programming		L	T	P	C
Core/Elective/Supportive	Core Paper:1		4	0	0	4
Pre-requisite	Students should have basic Computer Knowledge		Syllabus Version	2021-22 Onwards		
Course Objectives:						
The main objectives of this course are to:						
<ol style="list-style-type: none"> 1. To impart knowledge about Computer fundamentals 2. To understand the concepts and techniques in C Programming 3. To equip and indulge themselves in problem solving using C 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Learn about the Computer fundamentals and the Problem solving					K2
2	Understand the basic concepts of C programming					K2
3	Describe the reason why different decision making and loop constructs are available for iteration in C					K3
4	Demonstrate the concept of User defined functions, Recursions, Scope and Lifetime of Variables, Structures and Unions					K4
5	Develop C programs using pointers Arrays and file management					K3
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1	Fundamentals of Computers & Problem Solving in C				12 hours	
Fundamentals of Computers: Introduction – History of Computers – Generations of Computers – Classification of Computers – Basic Anatomy of a Computer System – Input Devices – Processor – Output Devices – Memory Management – Types of Software – Overview of Operating System – Programming Languages – Translator Programs – Problem Solving Techniques – Overview of C.						
Unit:2	Overview of C				15 hours	
Overview of C - Introduction - Character set - C tokens - keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators - Arithmetic Expressions - Evaluation of expression - precedence of arithmetic operators - Type conversion in expression – operator precedence & associativity - Mathematical functions - Reading & Writing a character - Formatted input and output.						
Unit:3	Decision Making, Looping and Arrays				15 hours	
Decision Making and Branching: Introduction – if, if...else, nesting of if ...else statements- else if ladder – The switch statement, The ?: Operator – The goto Statement. Decision Making and Looping: Introduction- The while statement- the do statement – the for statement- jumps in loops. Arrays – Character Arrays and Strings						
Unit:4	User-Defined Functions, Structures and Unions				15 hours	
User-Defined Functions: Introduction – Need and Elements of User-Defined Functions – Definition – Return Values and their types – Function Calls – Declarations – Category of Functions – Nesting of Functions – Recursion – Passing Arrays and Strings to Functions – The						

Scope, Visibility and Lifetime of Variables - Multifile Programs. Structures and Unions		
Unit:5	Pointers & File Management	15 hours
Pointers: Introduction - Understanding pointers - Accessing the address of a variable Declaration and Initialization of pointer Variable - Accessing a variable through its pointer Chain of pointers - Pointer Expressions - Pointer Increments and Scale factor - Pointers and Arrays - Pointers and Strings - Array of pointers - Pointers as Function Arguments Functions returning pointers - Pointers to Functions - Pointers and Structures. File Management in C.		
Unit:6	Contemporary Issues	3 hours
Problem Solving through C Programming - Edureka		
Total Lecture hours		75 hours
Text Book(s)		
1	E Balagurusamy: Computing Fundamentals & C Programming - Tata McGraw-Hill, Second Reprint 2008	
Reference Books		
1	Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson, 2002.	
2	Henry Mullish & Hubert L. Cooper: The Sprit of C, Jaico, 1996.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	Introduction to Programming in C - NPTEL	
2	Problem Solving through Programming in C - SWAYAM	
3	C for Everyone: Programming Fundamentals - Coursera	
Course Designed By:		

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	M	S	L
CO2	S	M	S	M	M	L	S	L	S	L
CO3	S	S	S	M	M	M	S	M	S	M
CO4	S	S	S	M	S	M	S	M	S	M
CO5	S	S	S	M	M	M	S	M	S	M

*S-Strong; M-Medium; L-Low

Coursecode	Digital Fundamentals and Computer Architecture		L	T	P	C
Core/Elective/Supportive	Core Paper :2		4	0	-	4
Pre-requisite	Student should have basic computer knowledge		Syllabus Version	2021-22 Onwards		
Course Objectives:						
On successful completion of this subject the student should have Knowledge on						
<ol style="list-style-type: none"> 1. To familiarize with different number systems and digital arithmetic & logic circuits 2. To understand the concepts of Combinational Logic and Sequential Circuits 3. To impart the knowledge of buses, I/O devices, flip flops, Memory and bus structure. 4. To understand the concepts of memory hierarchy and memory organization 5. To understand the various types of microprocessor architecture 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Learn the basic structure of number system methods like binary, octal and hexadecimal and understand the arithmetic and logical operations are performed by computers.					K3
2	Define the functions to simplify the Boolean equations using logic gates.					K1
3	Understand various data transfer techniques in digital computer and control unit operations.					K2
4	Compare the functions of the memory organization					K4
5	Analyze architectures and computational design concepts related to architecture organization and addressing modes					K4
K1 -Remember; K2 -Understand; K3 -Apply; K4 -Analyze; K5 -Evaluate; K6 -Create						
Unit:1	Number System and Arithmetic Circuits				12 hours	
Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess 3, Gray Code. Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half subtractor, Full subtractor, Parallel binary subtractor – Digital Logic: The Basic Gates – NOR, NAND, XOR Gates.						
Unit:2	Combinational Logic and Sequential Circuits				14 hours	
Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form Construction and properties – Implementations – Don't care combinations - Product of sum, Sum of products, Simplifications. Sequential circuits: Flip-Flops: RS, D, JK, and T - Multiplexers – Demultiplexers – Decoder Encoder – Shift Registers – Counters.						
Unit:3	Input-Output Organization and Data Transfer				12 hours	
Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking – Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication.						
Unit:4	Memory Organization				10 hours	
Memory Organization: Memory Hierarchy – Main Memory – Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct,						

Set-associative Mapping – Writing into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory, Page Table, Page Replacement.		
Unit:5	Case Studies	6hours
CASE STUDY: Pinout diagram, Architecture, Organization and addressing modes of 80286-80386-80486-Introduction to microcontrollers.		
Unit:6	Contemporary Issues	2hours
Expert lectures, online seminars – webinars		
Total Lecture hours		56hours
Text Book(s)		
1	Digital principles and applications, Albert Paul Malvino, Donald P Leach, TMH, 1996.	
2	Computer System Architecture-M.Morris Mano, PHI.	
3	Microprocessors and its Applications-Ramesh S. Goankar	
Reference Books		
1	Digital Electronics Circuits and Systems, V.K.Puri, TMH.	
2	Computer Architecture, M.Carter, Schaum's outline series, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	https://nptel.ac.in/courses/106/103/106103068/	
2	http://www.nptelvideos.in/2012/12/digital-computer-organization.html	
3	http://brittunculi.com/foca/materials/FOCA-Chapters-01-07-review-handout.pdf	
Course Designed By:		

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	S	M	M	L
CO2	S	M	S	M	M	S	M	M	M	L
CO3	S	S	S	M	S	S	S	M	M	M
CO4	S	S	S	S	S	S	S	M	S	S
CO5	S	S	S	S	S	S	S	M	S	S

*S-Strong; M-Medium; L-Low

Coursecode		ProgrammingLab-C	L	T	P	C
Core/Elective/Supportive		CoreLab:1	0	0	3	4
Pre-requisite	Students should have basic knowledge in C programming and algorithms		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to:						
<ol style="list-style-type: none"> To practice the Basic concepts, Branching and Looping Statements and Strings in C programming To implement and gain knowledge in Arrays, functions, Structures, Pointers and File handling 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Remember and Understand the logic for a given problem and to generate Prime numbers & Fibonacci Series (Program-1,2,3)					K1, K2
2	Apply the concept to print the Magic square, Sorting the data, Strings, Recursive functions and Pointers (Program-4,5,6,8,10)					K2, K3
3	Remember the logic used in counting the vowels in a sentence (Program-7)					K1
4	Apply and Analyze the concepts of Structures and File management (Program-9,11,12)					K3 & K4
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Programs						36 hours
1. Write a C program to find the sum, average, standard deviation for a given set of numbers.						
2. Write a C program to generate n prime numbers.						
3. Write a C program to generate Fibonacci series.						
4. Write a C program to print magic square of order n where n > 3 and n is odd.						
5. Write a C program to sort the given set of numbers in ascending order.						
6. Write a C program to check whether the given string is a palindrome or not using pointers.						
7. Write a C program to count the number of Vowels in the given sentence.						
8. Write a C program to find the factorial of a given number using recursive function.						
9. Write a C program to print the student's Mark sheet assuming roll no, name, and marks in 5 subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.						
10. Write a function using pointer to add two matrices and to return the resultant matrix to the calling function.						
11. Write a C program which receives two file names as arguments and check whether the file contents are same or not. If same delete the second file						
12. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write the total i) no. of chars ii) no. of words and iii) no. of lines.						
Total Lecture hours						36 hours
Text Book(s)						
1	E Balagurusamy: Computing Fundamentals & C Programming – Tata McGraw-Hill, Second Reprint 2008					
Reference Books						
1	Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson, 2002.					

2	HenryMullish& Hubert L.Cooper:TheSpritofC, Jaico,1996.
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]	
1	IntroductiontoProgramming inC–NPTEL
2	ProblemsolvingthroughProgramminginC– SWAYAM
3	CforEveryone: ProgrammingFundamentals–Course
CourseDesignedBy:	

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	L	M	S	S	S	L
CO3	S	S	S	M	L	M	S	S	S	M
CO3	S	S	S	L	L	M	S	S	S	L
CO4	S	S	S	M	L	M	S	S	S	M

*S-Strong;M-Medium;L-Low





**Second
Semester**

Coursecode		C++PROGRAMMING	L	T	P	C
Core/Elective/Supportive		Core:3	5	0	0	4
Pre-requisite		Before starting this course one should have a basic understanding of computer programs and computer programming language. If you know the concepts of C programming it will be much easier to understand this course	Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to:						
<ol style="list-style-type: none"> 1. Impart knowledge of object-oriented programming concepts and implement them in C++ 2. Enable to differentiate procedure-oriented and object-oriented concepts. 3. Equip with the knowledge of concept of Inheritance so that learner understands the need of inheritance. 4. Explain the importance of data hiding in object-oriented programming 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Define the different programming paradigms such as procedure-oriented and object-oriented programming methodology and conceptualize elements of OO methodology					K1
2	Illustrate and model real-world objects and map it into programming objects for a legacy system.					K2
3	Identify the concepts of inheritance and its types and develop applications using overloading features.					K3
4	Discover the usage of pointers with classes					K4
5	Explain the usage of Files, templates and understand the importance of exception Handling					K5
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1	INTRODUCTION TO C++					10hours
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..						
Unit:2	CLASSES AND OBJECTS					10hours
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.						
Unit:3	OPERATOR OVERLOADING					12hours
Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchical, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.						

Unit:4	POINTERS	13hours
Declaration–PointertoClass, Object–thispointer –Pointersto derivedclassesandBase classes –Arrays–Characteristics–arrayofclasses–Memorymodels–newanddeleteoperators–dynamicobject – Binding, Polymorphism and Virtual Functions.		
Unit:5	FILES	13hours
File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling - String – Declaring and Initializingstringobjects– String Attributes– Miscellaneousfunctions.		
Unit:6	ContemporaryIssues	2hours
Expertlectures,onlineseminars–webinars		
	TotalLecturehours	60hours
TextBook(s)		
1	Ashok N Kamthane, Object-Oriented Programming with Ansi And Turbo C++, Pearson Education,2003.	
ReferenceBooks		
1	E.Balagurusamy, Object-Oriented Programming with C++, TMH, 1998.	
2	MariaLitvin&GrayLitvin, C++ for you, Vikas publication, 2002.	
3	JohnRHubbard, Programming with C, 2nd Edition, TMH publication, 2002.	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1	https://www.spoken-tutorial.org	
2	https://www.tutorialspoint.com/cplusplus/index.htm	
3	https://www.w3schools.com/cpp/	
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	M	M	M	L
CO2	S	S	S	S	S	S	S	M	M	M
CO3	S	S	S	S	S	S	S	M	M	M
CO4	S	S	S	S	S	S	S	M	M	S
CO5	S	S	S	S	S	S	S	M	M	S

*S-Strong;M-Medium;L-Low

Coursecode	PROGRAMMING LAB-C++		L	T	P	C
Core/Elective/Supportive	CoreLab: 2		0	0	4	4
Pre-requisite	Basic understanding of computer programs and computer programming language like C.		Syllabus Version		2021-22 Onwards	
Course Objectives:						
<p>The main objectives of this course are to:</p> <ol style="list-style-type: none"> 1. Impart knowledge of object-oriented programming concepts and implement them in C++ 2. Enable to differentiate procedure-oriented and object-oriented concepts. 3. Equip with the knowledge of concept of Inheritance so that learner understands the need of inheritance. 4. Explain the importance of data hiding in object-oriented programming 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Define the different programming paradigms such as procedure-oriented and object-oriented programming methodology and conceptualize elements of OOP methodology					K1
2	Illustrate and model real-world objects and map it into programming objects for a legacy system.					K2
3	Identify the concepts of inheritance and its types and develop applications using overloading features.					K3
4	Discover the usage of pointers with classes					K4
5	Explain the usage of Files, templates and understand the importance of exception handling					K5
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Programs						36 hours
1. Write a C++ Program to create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element check for overflow and underflow conditions..						
2. Write a C++ Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write member functions ADD(), SUB(), MUL(), DIV() to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.						
3. Write a C++ Program to read an integer number and find the sum of all the digits until it reduces to a single digit using constructors, destructors and in-line member functions.						
4. Write a C++ Program to create a class FLOAT that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT						
5. Write a C++ Program to create a class STRING. Write a Member Function to initialize, get and display strings. Overload the operators ++ and == to concatenate two strings and to compare two strings respectively.						
6. Write a C++ Program to create a class, which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic, Salary, Grade. Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade.						
7. Write a C++ Program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS						

Calculate_Area()andCalculate_Perimeter()to calculate area and perimeter of various figures. Derive three classes SQUARE, RECTANGLE, TRIANGLE from class Shape and CalculateArea and Perimeter of each class separately and display the result.	
8. Write a C++ Program to create two classes each class consists of two private variables, a integer and a float variable. Write member functions to get and display them. Write a FRIEND Function common to both classes, which takes the object of above two classes as arguments and the integer and float values of both objects separately and display the result.	
9. Write a C++ Program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.	
10. Write a C++ Program to check whether the given string is a palindrome or not using Pointers	
11. Write a C++ Program to create a File and to display the contents of that file with line numbers.	
12. Write a C++ Program to merge two files into a single file.	
Text Book(s)	
1	Ashok N Kamthane, Object-Oriented Programming with Ansi And Turbo C++, Pearson Education, 2003
Reference Books	
1	E. Balagurusamy, Object-Oriented Programming with C++, TMH, 1998.
2	Maria Litvin & Gray Litvin, C++ for you, Vikas publication, 2002.
3	John R Hubbard, Programming with C, 2nd Edition, TMH publication, 2002.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	
2	
4	
Course Designed By:	

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	M	M	M	L
CO2	S	S	S	S	S	S	S	M	M	M
CO3	S	S	S	S	S	S	S	M	M	M
CO4	S	S	S	S	S	S	S	M	M	S
CO5	S	S	S	S	S	S	S	M	M	S

*S-Strong; M-Medium; L-Low

Coursecode	InternetBasics			L	T	P	C
Core/Elective/Supportive	CoreLab :3			0	0	2	2
Pre-requisite	Knowledgeof WINDOWSOperatingSystems			Syllabus Version	2021-22 Onwards		
CourseObjectives:							
Themain objectives ofthis courseareto:							
<ol style="list-style-type: none"> 1. Introduce the fundamentalsofInternetandtheWebfunctions. 2. Impartknowledgeand essentialskillsnecessaryto use theinternetanditsvariouscomponents. 3. Find,evaluate,anduseonlineinformation resources. 4. UseGoogleAppsforeducationeffectively. 							
ExpectedCourseOutcomes:							
Onthesuccessfulcompletion of thecourse, studentwill beable to:							
1	Understandthe fundamentalsofInternetandthe Webconcepts						K2
2	Explaintheusageofinternet conceptsandanalyzeits components.						K2
3	Identifyandapplythe onlineinformationresources						K3
4	Inspectandutilizethe appropriateGoogle Appsforeducation effectively						K3, K4
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 -Create							
Programs				36hours			
1.Create an email account in Gmail. Using the account created compose a mail to invite other collegestudents for your college fest, enclose the invitation as attachment and send the mail to at least 50recipients.Use CCand BCCoptions accordingly.							
2.Open your inbox in the Gmail account created, check the mail received from your peer from othercollege inviting you for his college fest, and download the invitation. Reply to the mail with a thankyounote fortheinviteandforwardthemailtootherfriends.							
3.Assumethatyouarestudyinginfinalyearofyourgraduationandareeagerlylookingforajob.Visitanyjob portaland upload your resume.							
4. CreateameetingusingGooglecalendarandsharemeetingidtotheattendees.Transfertheownership tothe Manageroncethemeeting idisgenerated.							
5. CreatealabelanduploadbulkcontactsusingimportoptioninGoogleContacts.							
6. CreateyourownGoogleclassroomandinviteallyourfriendsthroughemailid.PoststudymaterialinGooglecl assroomusingGoogledrive.Createaseparatefolderforeverysubjectanduploadallunit wiseE-ContentMaterials.							
7. CreateandshareafolderinGoogleDriveusing‘sharelink’optionandsetthepermissiontoaccess that folder by yourfriendsonly.							
8. CreateonepagestoryinyourmothertonguebyusingvoicerecognitionfacilityofGoogledocs.							
9. CreatearegistrationformforyourDepartmentSeminarorConferenceusingGoogleForms.							

10. Create a question paper with multiple choice types of questions for a subject of your choice, using Google Forms.	
11. Create a Google form with minimum 25 questions to conduct a quiz and generate a certificate after submission.	
12. Create a meet using Google Calendar and record the meet using Google Meet.	
13. Create a Google slides for a topic and share the same with your friends.	
14. Create a template for a seminar certificate using Google Slides.	
15. Create a sheet to illustrate simple mathematical calculations using Google Sheets.	
16. Create a student's internal mark statement and share the Google sheets via link.	
17. Create different types of charts for a range in CIA mark statement using Google Sheets.	
18. Create a mark statement in Google Sheets and download it as PDF, .xls and .csv files.	
Text Book(s)	
1	Ian Lamont, Google Drive & Docs in 30 Minutes, 2 nd Edition.
2	
Reference Books	
1	Sherry Kinkoph Gunter, My Google Apps, 2014.
2	
3	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	https://www.youtube.com/watch?v=NzPNk44tdlQ
2	https://www.youtube.com/watch?v=PKuBtQuFa-8
4	https://www.youtube.com/watch?v=hGER1hP58ZE
Course Designed By:	

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	S	S	S	M	M	S	L
CO2	S	M	S	S	S	S	S	S	S	M
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low



**Third
Semester**

Coursecode	DataStructures		L	T	P	C
Core/Elective/Supportive	Core: 4		6	0	0	4
Pre-requisite	Basic understanding of Data storage, retrieval and algorithms.		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to: <ol style="list-style-type: none"> 1. To introduce the fundamental concept of data structures 2. To emphasize the importance of data structures in developing and implementing efficient algorithms. 3. Understand the need for Data Structures when building application 4. Ability to calculate and measure efficiency of code 5. Improve programming logic skills. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basic concepts of data structures and algorithms					K1-K2
2	Construct and analyze of stack and queue operations with illustrations					K2-K4
3	Enhance the knowledge of Linked List and dynamic storage management.					K2-K3
4	Demonstrate the concept of trees and its applications					K2-K3
5	Design and implement various sorting and searching algorithms for applications and understand the concept of file organizations					K1-K4
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1	INTRODUCTION				15hours	
Introduction of Algorithms, Analysing Algorithms. Arrays: Sparse Matrices - Representation of Arrays. Stacks and Queues. Fundamentals - Evaluation of Expression Infix to Postfix Conversion - Multiple Stacks and Queues						
Unit:2	LINKED LIST				12hours	
Linked List: Singly Linked List - Linked Stacks and Queues - Polynomial Addition- More on Linked Lists - Sparse Matrices - Doubly Linked List and Dynamic – Storage Management - Garbage Collection and Compaction.						
Unit:3	TREES				15hours	
Basic Terminology - Binary Trees - Binary Tree Representations – Binary Trees-Traversal- More On Binary Trees – Threaded Binary Trees - Binary Tree. Representation of Trees - Counting Binary Trees. Graphs: Terminology and Representations - Traversals, Connected Components and Spanning Trees, Shortest Paths and Transitive Closure						
Unit:4	EXTERNAL SORTING				15hours	
Storage Devices - Sorting with Disks: K-Way Merging – Sorting with Tapes Symbol Tables: Static Tree Tables - Dynamic Tree Tables - Hash Tables: Hashing Functions - Overflow Handling.						

Unit:5	INTERNAL SORTING	15hours
InsertionSort-QuickSort-2WayMergeSort-HeapSort–ShellSort- SortingonSeveralKeys.Files:Files,QueriesandSequentialorganizations–IndexTechniques- FileOrganizations.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars -webinars		
	TotalLecturehours	75hours
TextBook(s)		
1	EllisHorowitz,Sartaj Shani,DataStructures,GalgotiaPublication.	
2	Ellis Horowitz, Sartaj Shani, Sanguthevar Rajasekaran, Computer Algorithms, GalgotiaPublication.	
3	S.LovelynRose,R.Venkatesan,DataStructures,Wiley IndiaPrivateLimited,2015,1 st Edition	
ReferenceBooks		
1	Jean- Paul,Tremblay&PaulG.Sorenson,AnIntroductiontoDatastructureswithApplicationsTataMcGra w Hill Company 2008, 2ndEdition.	
2	Samanta.D,ClassicData StructurePrenticeHallof India PvtLtd 2007,9 th Edition	
3	SeymourLipschutz,DataStructuresMcGrawHill Publications,2014,1stEdition	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
2		
3		
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	M	M	M
CO2	S	S	S	M	M	M	M	M	M	M
CO3	S	S	S	M	S	M	M	M	S	S
CO4	S	S	S	M	S	S	S	S	M	M
CO5	S	S	S	M	M	S	S	M	M	S

*S-Strong;M-Medium;L-Low

Coursecode		JavaProgramming	L	T	P	C
Core/Elective/Supportive		Core: 5	6	0	0	4
Pre-requisite	The objective of the course is to train the student to acquire problem-solving skills through object-oriented programming		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to: <ol style="list-style-type: none"> 1. To expose the students with the introduction to OOPs and advantages of object-oriented programming. 2. The concepts of OOPs make it easy to represent real world identities. 3. The course introduces the concepts of converting the real-time problems into objects and methods and their interaction with one another to attain a solution. 4. Simultaneously it provides the syntax of programming language Java for solving the real-world problems. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	The competence and the development of small to medium-sized application program that demonstrate professional acceptable coding					K1-K2
2	Demonstrate the concept of object-oriented programming through Java					K2-K4
3	Apply the concept of Inheritance, Modularity, Concurrency, Exceptions handling and data persistence to develop Java program					K3
4	Develop Java programs for applets and graphics programming					K3
5	Understand the fundamental concepts of AWT controls, layouts and Events					K1-K2
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5-Evaluate; K6-Create						
Unit:1	FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING				15hours	
Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming. Java Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and www – Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.						
Unit:2	BRANCHING AND LOOPING				12hours	
Constants, Variables, Data Types - Operators and Expressions – Decision Making and Branching: if, if...else, nested if, switch, ?: Operator - Decision Making and Looping: while, do, for – Jump in Loops - Labeled Loops – Classes, Objects and Methods.						
Unit:3	ARRAYS AND INTERFACES				15hours	
Arrays, Strings and Vectors – Interfaces: Multiple Inheritance – Packages: Putting Classes together – Multithreaded Programming.						

Unit:4	ERRORHANDLING	15hours
ManagingErrorsandExceptions –AppletProgramming –GraphicsProgramming.		
Unit:5	MANAGINGINPUT/OUTPUTFILESINJAVA	15hours
Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Usingstreams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writingcharacters,Byte-Handling PrimitivedataTypes – RandomAccessFiles.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars -webinars		
	TotalLecturehours	75hours
TextBook(s)		
1	ProgrammingwithJava–APrimer -E.Balagurusamy, 5 th Edition, TMH.	
2	Herbert Schildt , Java: The Complete Reference, McGraw Hill Education, Oracle Press 10 th Edition, 2018	
3	ProgrammingwithJava–APrimer-E.Balagurusamy,3rdEdition,TMH.	
ReferenceBooks		
1	TheCompleteReferenceJava2-PatrickNaughton& HebertSchildt,3rdEdition,TMH	
2	ProgrammingwithJava– JohnR.Hubbard, 2ndEdition,TMH.	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1	www.spoken-tutorial.org	
2	www.nptel.ac.in	
3	https://www.w3schools.in/java-tutorial/	
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	L	S	M	M	M
CO2	S	S	S	M	S	L	S	M	M	M
CO3	S	S	S	M	S	M	S	S	M	M
CO4	S	S	S	M	S	M	M	S	M	M
CO5	S	S	S	M	S	M	S	S	M	M

*S-Strong;M-Medium;L-Low

Coursecode	ProgrammingLab –JAVA			L	T	P	C
Core/Elective/Supportive	CoreLab:4			0	0	5	4
Pre-requisite	Students should know about the OOPS concept and basic knowledge in java theory.			Syllabus Version		2021-22 Onwards	
Course Objectives:							
The main objectives of this course are to:							
<ol style="list-style-type: none"> 3. The main objective of JAVA Programming Lab is to provide the students a strong foundation on programming concepts and its applications through hands-on training. 4. To practice the Basic concepts, Branching and Looping Statements and Strings in C programming 5. To implement and gain knowledge in Arrays, functions, Structures, Pointers and File handling 							
Expected Course Outcomes:							
On the successful completion of the course, student will be able to:							
1	Understand the basic concepts of Java Programming with emphasis on ethics and principles of professional coding					K1, K2	
2	Demonstrate the creation of objects, classes and methods and the concepts of constructor, methods overloading, Arrays, branching and looping					K2	
3	Create data files and Design a page using AWT controls and Mouse Events in Java programming. Implement the concepts of code reusability and debugging.					K2, K3	
4	Develop applications using Strings, Interfaces and Packages and applets					K3	
5	Construct Java programs using Multithreaded Programming and Exception Handling					K3	
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create							
Programs						36 hours	
1. Write a Java Application to extract a portion of a character string and print the extracted string.							
2. Write a Java Program to implement the concept of multiple inheritance using Interfaces.							
3. Write a Java Program to create an Exception called payout-of-bounds and throw the exception.							
4. Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.							
5. Write a Java Program to draw several shapes in the created windows.							
6. Write a Java Program to create a frame with four text fields name, street, city and pin code with suitable tables. Also add a button called my details. When the button is clicked its corresponding values are to be appeared in the text fields.							
7. Write a Java Program to demonstrate the Multiple Selection List-box.							
8. Write a Java Program to create a frame with three text fields for name, age and qualification and a text field for multiple line for address							
9. Write a Java Program to create Menu Bars and pull down menus.							
10. Write a Java Program to create frames which respond to the mouse clicks. For each events with mouse such as mouseup, mousedown, etc., the corresponding message to be displayed.							

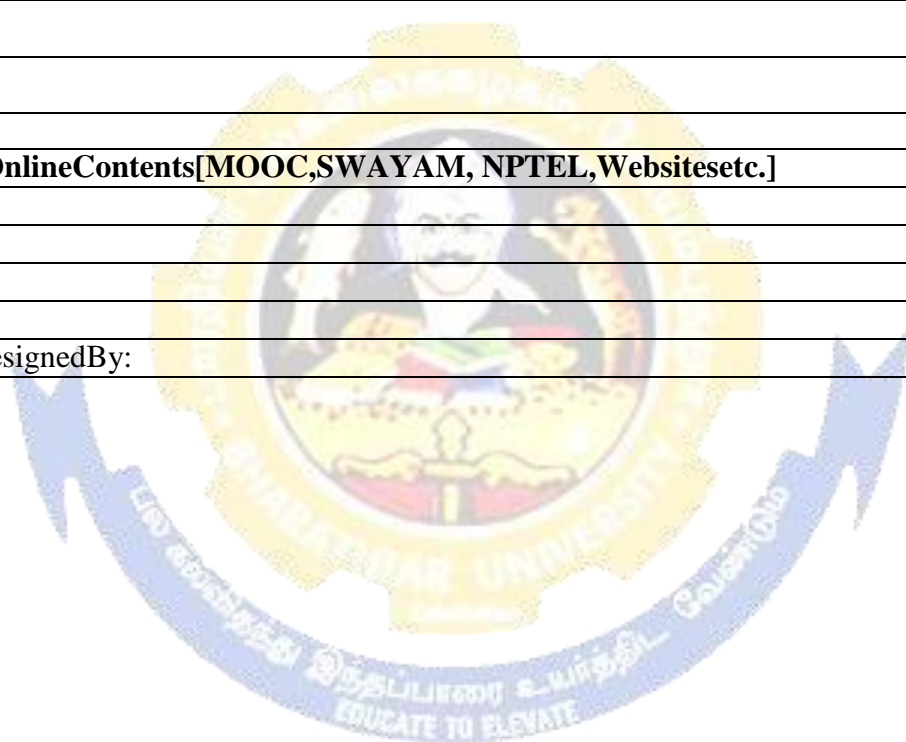
11. Write a Java Program to draw circle, square, ellipse and rectangle at the mouse click positions.	
12. Write a Java Program which opens an existing file and appends text to that file.	
	Total Lecture hours
	36 hours
Text Book(s)	
1	Programming with Java – A Primer – E. Balagurusamy, 5 th Edition, TMH.
2	Herbert Schildt, Java: The Complete Reference, McGraw Hill Education, Oracle Press 10 th Edition, 2018
3	Programming with Java – A Primer – E. Balagurusamy, 3 rd Edition, TMH.
Reference Books	
1	The Complete Reference Java 2 – Patrick Naughton & Herbert Schildt, 3 rd Edition, TMH
2	Programming with Java – John R. Hubbard, 2 nd Edition, TMH.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	https://www.w3resource.com/java-exercises/
2	https://www.udemy.com/introduction-to-java-programming/
3	
Course Designed By:	

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	S	S	S	M	M	L
CO2	S	S	S	L	S	M	S	M	M	L
CO3	S	S	S	M	S	M	S	M	M	L
CO4	S	S	S	M	S	M	S	S	M	S
CO5	S	S	S	M	S	S	S	S	M	S

*S-Strong; M-Medium; L-Low

Coursecode	WAP&XML		L	T	P	C
Core/Elective/Supportive	Skillbased Subject -1		5	0	0	3
Pre-requisite	Basicknowledgeoncomputernetworks		Syllabus Version		2021-22 Onwards	
CourseObjectives:						
Themain objectives ofthis courseareto: 1. Toenablethestudentstolearnwirelessapplicationprotocolsandarchitectures. 2. Tolearnwirelessmarkup languageandthetomodeltodevelopwirelessapplicationsandwirelesstelephonicapplications.						
ExpectedCourseOutcomes:						
Onthesuccessfulcompletion ofthecourse, studentwill beable to:						
1	Understand the basic concepts of WAP, wireless application protocols, componentsand WAPstandards,design principles.					K1-K2
2	Knowledgeonbasicsofwirelessmarkuplanguagedocumentmodel,eventsand bindings.					K2-K3
3	Understandthewireless markuplanguage, DTD, errorsandlimitation.					K3
4	Knowledgeoncreatingwirelessapplicationsanduserinterfacedesignand itsguidelines.					K3
5	Toinculcateknowledgeonwirelesstelephonyapplications,WTAarchitectureand mobile internet future.					K1-K4
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 -Create						
Unit:1	IntroductiontoWAP				15hours	
Market Convergence Enabling Convergence – Key Services for the Mobile Internet. Overview of theWirelessApplicationProtocol:TheOriginsofWAP–OverviewoftheWAPArchitecture– ComponentsoftheWAPStandard–NetworkInfrastructureServicesSupportingWAPClients–WAPArchitecture DesignPrinciples –RelationshipptoOtherStandards.						
Unit:2	WirelessMarkupLanguage				12hours	
Overview–TheWMLDocumentModel–WMLAuthoring–URLsIdentifyContent–MarkupBasics–WML– Basics– Basic Content– Events, TashsandBindings.						
Unit:3	WirelessMarkupLanguage-SecurityandErrors				15hours	
Controls–MiscellaneousMarkup–SendingInformation–ApplicationSecurity–OtherData:TheMetaElement– DocumentTypeDeclarations–ErrorsandBrowserLimitations–ContentGeneration–WML VersionNegotiation						
Unit:4	MakingWirelessApplicationsand UserInterfaceDesign				15hours	
MakingWirelessApplications,EasytoUse: WebSiteDesign:ComputerTerminals VsMobileTerminals –DesigningaUsableWAPSite–StructuredUsabilityMethods–UserInterfaceDesignGuidelines– DesignGuidelinesfor SelectedWML Elements						
Unit:5	WirelessTelephonyApplications				15hours	
OverviewoftheWTAArchitecture–WTAClientFramework–WTAServer&Security–Design Considerations – Application Creation Toolbox – Future WTA Enhancements. The Mobile Internet Future:Better Content,Easier Access– BeyondBrowsing–BeyondCellular–Mobile DataUnleashed						

Unit:6		ContemporaryIssues	3hours
Expertlectures,onlineseminars -webinars			
		TotalLecturehours	75hours
TextBook(s)			
1	Sandeep Singhal, Thomas Bridgman, Lalitha Suryanarayana, Daniel Mauney, Jari Alvinen,DavidBevis,JimChan,StefanHild,—TheWirelessApplicationProtocol,PearsonEducation, 2003.		
2			
3			
ReferenceBooks			
1	TCP/IPProtocolSuite,BehrouzA.Forouzan,3rdedition,TMH.		
2			
3			
RelatedOnlineContents[MOOC,SWAYAM, NPTEL, Websitesetc.]			
1			
2			
3			
CourseDesignedBy:			





Fourth Semester

Coursecode	System Software and Operating Systems		L	T	P	C
Core/Elective/Supportive	Core:6		6	0	0	4
Pre-requisite	Students Should have the basic knowledge in computer.	Syllabus Version	2021-22 Onwards			
Course Objectives:						
The main objectives of this course are to:						
<ol style="list-style-type: none"> 1. To understand the processing of programs on a computer system to design and implementation of language processor. 2. To enhance the ability of program generation through expansion and gain knowledge about Code optimization using software tools. 3. Students will gain knowledge of basic operating system concepts. 4. To have an in-depth understanding of process concepts, deadlock and memory management. 5. To provide an exposure to scheduling algorithms, devices and information management. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Know the program generation and program execution activities in detail					K1
2	Understand the concepts of Macro Expansions and Gain the knowledge of Editing processes					K2-K3
3	Remember the basic concepts of operating system					K1
4	Understand the concepts like interrupts, deadlock, memory management and file management					K2
5	Analyze the need for scheduling algorithms and implement different algorithms used for representation, scheduling, and allocation in DOS and UNIX operating system.					K1-K4
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1	INTRODUCTION TO SYSTEM SOFTWARE				12 hours	
Introduction – System Software and machine architecture. Loader and Linkers: Basic Loader Functions - Machine dependent loader features – Machine independent loader features - Loader design options						
Unit:2	MACHINE AND COMPILER				15 hours	
Machine dependent compiler features- Intermediate form of the program- Machine dependent code optimization- Machine independent compiler features- Compiler design options- Division into passes – Interpreters – p-code compilers- Compiler-compilers.						
Unit:3	OPERATING SYSTEM				15 hours	
What is an Operating System? – Process Concepts: Definition of Process- Process States- Process States Transition – Interrupt Processing – Interrupt Classes - Storage Management: Real Storage: Real Storage Management Strategies – Contiguous versus Non-contiguous storage allocation – Single User Contiguous Storage allocation- Fixed partition multiprogramming – Variable partition multiprogramming.						
Unit:4	VIRTUAL STORAGE				15 hours	
Virtual Storage: Virtual Storage Management Strategies – Page Replacement Strategies –						

WorkingSets–DemandPaging– PageSize.ProcessorManagement:JobandProcessorScheduling:PreemptiveVs Non- preemptivescheduling–Priorities– Deadlinescheduling.		
Unit:5	DEVICEANDINFORMATIONMANAGEMENT	15hours
Device and Information Management Disk Performance Optimization: Operation of moving headdisk storage – Need for disk scheduling – Seek Optimization – File and Database Systems: FileSystem – Functions – Organization – Allocating and freeing space – File descriptor – Accesscontrolmatrix.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars -webinars		
TotalLecturehours		75hours
TextBook(s)		
1	Leland L.Beck, System Software: An Introduction to Systems Programming, Pearson, ThirdEdition.	
2	H.M.Deitel,OperatingSystems,2ndEdition,Perason,2003.	
ReferenceBooks		
1	Achy8utS.Godbole,OperatingSystems,TMH,2002.	
2	JohnJ. Donovan,SystemsProgramming,TMH, 1991.	
3	D.M.Dhamdhere,SystemsProgrammingandOperatingSystems,2nd RevisedEdition,TMH.	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
2		
3		
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	M	M	M	M	L
CO2	S	S	S	S	S	M	M	M	S	L
CO3	S	M	M	M	S	M	S	S	S	L
CO4	S	S	S	M	S	S	S	M	M	M
CO5	S	S	S	M	S	S	S	M	M	M

*S-Strong;M-Medium;L-Low

Coursecode	LinuxandShellProgramming		L	T	P	C
Core/Elective/Supportive	Core:7		5	0	0	4
Pre-requisite	Before starting the course students should have the basic knowledge about operating system and C programming.		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to: <ol style="list-style-type: none"> 1. Linux is a multi-user and multi-tasking operating system and after learning the concepts of an operating system 2. Student will be able to write simple shell programming using Linux utilities, pipes and filters. 3. The file system, process management and memory management are discussed. 4. Various commands used by Linux shell is also discussed which make the users to interact with each other. 5. Bourne shell programming is dealt in depth which can be used to develop applications. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Describe the architecture and features of Linux Operating System and distinguish it from other Operating System.					K1
2	Develop Linux utilities to perform File processing, Directory handling, User Management and display system configuration					K2-K3
3	Develop shell scripts using pipes, redirection, filters and Pipes					K2
4	Apply and change the ownership and file permissions using advanced Unix commands.					K3
5	Build Regular expression to perform pattern matching using utilities and implement shell scripts for real time applications.					K3-K6
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1	INTRODUCTION				12hours	
Introduction to LINUX Operating System: Introduction- The LINUX Operating System.						
Unit:2	MANAGING FILES AND DIRECTORIES				15hours	
Managing Files and Directories: Introduction- Directory Commands in LINUX- File Commands in LINUX.						
Unit:3	VIEDITOR				15hours	
Creating files using the vi editor: Text editors- The vi editor. Managing Documents: Locating files in LINUX- Standard files- Redirection - Filters- Pipes.						
Unit:4	SECURING FILES				15hours	
Securing files in LINUX: File access permissions - viewing File access permissions - Changing File access permissions. Automating Tasks using Shell Scripts: Introduction - Variables- Local and Global Shell variables- Command Substitution.						
Unit:5	CONDITIONAL EXECUTION IN SHELL SCRIPTS				15hours	
Using Conditional Execution in Shell Scripts: Conditional Execution- The case... esac Construct.						

Managing repetitive tasks using Shell Scripts: Using Iteration in Shell Scripts – The while construct – until construct – for construct – break and continue commands – Simple Programs using Shell Scripts.		
Unit:6	Contemporary Issues	3hours
Expert lectures, online seminars -webinars		
	Total Lecture hours	75hours
Text Book(s)		
1	Operating System LINUX, NIIT, PHI, 2006, Eastern Economy Edition.	
2	N.B. Venkateswarlu , Introduction to Linux: Installation and Programming, BS Publications, 2008, 1st Edition	
Reference Books		
1	Richard Petersen, Linux: The Complete Reference, Sixth Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, Edition 2008.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	http://spoken-tutorial.org/	
2	https://www.tutorialspoint.com/linux/index.htm	
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	M	M	M	M	L
CO2	S	S	S	M	S	M	M	M	M	L
CO3	S	S	S	M	S	M	S	S	S	M
CO4	S	S	S	M	S	M	S	S	S	M
CO5	S	S	S	S	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low

Coursecode	Programming Lab – LINUXandSHELLPROGRAMMING		L	T	P	C
Core/Elective/Supportive	CoreLab:5		0	0	4	2
Pre-requisite	Students should have the prior basic knowledgeinoperating system.		Syllabus Version		2021-22 Onwards	
CourseObjectives:						
Themain objectives ofthis courseareto:						
<ol style="list-style-type: none"> 1. DescribethearchitectureandfeaturesofLinuxOperatingSystem 2. TocreateprogramsinthelinuxenvironmentusingLinuxutilities andcommands. 3. Studentisgivenan introductionofLinuxshell commands andtheywillbe abletowriteownshellscripTs. 4. Shellprogrammingisdealtin depthwhichcanbeusedtodevelopapplications. 						
ExpectedCourseOutcomes:						
Onthesuccessful completionofthecourse,student willbe ableto:						
1	DevelopLinuxutilitiestoperformFileprocessing,DirectoryhandlingandUserManagement				K1, K2	
2	Understandanddevelop shellscripTsusingpipes,redirection,filters,Pipesanddisplaysystem configuration				K2-K3	
3	Develop simple shell scripTs applicable to file access permission networkadministration				K3	
4	ApplyandchangetheownershipandfilepermissionsusingadvanceUnixcom mands.				K4-K5	
5	CreateshellscripTsforrealtimeapplications.				K6	
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 -Create						
Programs					36hours	
1. WriteashellscripTtostimulatethefilecommands:rm,cp,cat,mv,cmp,wc,split,diff.						
2. WriteashellscripTtoshowthefollowingsystemconfiguration:						
<ol style="list-style-type: none"> a. currentlyloggeduserandhislogname b. currentshell,homedirectory,OperatingSystemtype,currentPathsetting,currentworkingdirectory c. showcurrentlyloggednumberofusers,showallavailableshells d. showCPUinformationlikeprocestortype ,speed e. showmemoryinformation 						
3. WriteaShellScript toimplement thefollowing: pipes,Redirection andteecommands.						
4. WriteashellscripTfordisplayingcurrentdate,username,filelistinganddirectoriesbygettinguser choice.						
5. WriteashellscripT toimplement thefilter commands.						
6. WriteashellscripT to removethefiles whichhasfilesizeas zero bytes.						
7. WriteashellscripT to find thesum ofthe individual digits ofagiven number.						
8. WriteashellscripTtofindthegreatestamongthegivensetofnumbersusingcommandlinearguments.						
9. WriteashellscripTforpalindromechecking.						

10. Write a shell script to print the multiplication table of the given argument using for loop.	
	Total Lecture hours 36 hours
Text Book(s)	
1	Operating System LINUX, NIIT, PHI, 2006, Eastern Economy Edition.
2	N.B. Venkateswarlu, Introduction to Linux: Installation and Programming, BS Publications, 2008, 1 st Edition
Reference Books	
1	Richard Petersen, Linux: The Complete Reference, Sixth Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, Edition 2008.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	https://www.w3resource.com/linux-exercises/
2	http://spoken-tutorial.org/
3	
Course Designed By:	

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	S	M	M	M
CO3	S	S	S	M	S	M	S	S	M	M
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low

Coursecode	XMLLab		L	T	P	C
Core/Elective/Supportive	SkillBasedSubject2(Lab):1		0	0	4	3
Pre-requisite	Basicknowledgeinmarkuplanguages.		Syllabus	2021-22 Onwards		
CourseObjectives:						
Themain objectives ofthis courseareto:						
<ol style="list-style-type: none"> Toenablethestudentstolearnwirelessapplicationprotocolsandarchitectures. Tolearnwirelessmarkuplanguageandthemodeltodevelopwirelessapplicationsandwirelesstel ephonicapplications. 						
ExpectedCourseOutcomes:						
Onthesuccessful completionofthecourse,student willbe ableto:						
1	Understandthebasicconcepts of WAP, wireless application protocols, componentsand WAPstandards,design principles.				K1-K2	
2	Knowledgeonbasicsofwirelessmarkuplanguagedocumentmodel,eventsand bindings.				K2-K3	
3	Understandthewireless markuplanguage, DTD, errorsandlimitation.				K3	
4	Knowledgeoncreatingwirelessapplicationsanduserinterfacedesignand itsguidelines.				K3,K6	
5	Toinculcateknowledgeonwirelesstelephonyapplications,WTAarchitectureand mobile internet future.				K2-K4K6	
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 -Create						
Programs					36hours	
1.Create ademo forXSLT.						
2.Create amenuin XML.						
3.Writean XML documentto display yourbio-data						
4.Display XMLinformationin Treestructure format.						
5.WriteaXML programto navigatetherecordsin thefile.						
6.Writeaprogram to savedata to anXMLfile.						
7.Writeaprogram toshow thefunction ofCDATA.						
8.WriteaXMLprogramtomaintainthestudent database.						
9.Writeaprogramto generateXMLfilefromthe Database.						
10.WriteaXMLprogramto implementtheInternalDTDand ExternalDTD.						
11.Writeaprogram to loadatext fileinto adiv element with XML HTTP.						
12.Listdata fromanXML filewith XMLHTTP.						
TotalLecturehours					36hours	
TextBook(s)						
1	DavidHunteretal.,Beginning XML,WroxPublications2000.					
ReferenceBooks						
1	HTMLandXMLanIntroduction,NIIT,PrenticeHalof IndiaPvt.Ltd					
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]						

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2	
CourseDesignedBy:	

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	M	S	S	S	M
CO3	S	S	S	S	S	M	S	S	S	M
CO3	M	M	S	M	S	M	M	M	M	M
CO4	S	M	M	M	S	S	M	M	M	S
CO5	S	M	S	S	S	S	S	S	M	M

*S-Strong;M-Medium;L-Low







**Fifth
Semester**

Coursecode	RDBMS&Oracle		L	T	P	C
Core/Elective/Supportive	Core:8		6	0	0	4
Pre-requisite	Basicknowledgeaboutthedata,tableanddatabasein computers	Syllabus Version	2021-22 Onwards			
CourseObjectives:						
Themain objectives ofthis course areto: <ol style="list-style-type: none"> 1. Thecoursedescribesthedata,organizingthedataindatabase,database administration. 2. Tograsp thedifferent issues involvedin thedesign of adatabasesystem. 3. Tostudythephysicaland logicaldatabasesigns anddatabasemodelinglikere relational,Hierarchical, networkmodels,databasesecurity, integrity and normalization. 4.ItalsogivesintroductiontoSQLlanguageto retrievethedata fromthedatabasewith suitableapplicationdevelopment. 5. Provide strong foundation of database concepts and to introduce students to applicationdevelopmentin DBMS. 						
ExpectedCourseOutcomes:						
Onthesuccessful completion ofthecourse,student willbe ableto:						
1	Understand the basic concepts of Relational Data Model, Entity-RelationshipModel andprocess of Normalization				K1-K2	
2	Understandand construct databaseusingStructuredQueryLanguage(SQL)in Oracle9i environment.				K1-K3	
3	Learn basics of PL/SQL and develop programs using Cursors,Exceptions,Procedures and Functions.				K1-K4	
4	Understandandusebuilt-infunctionsandenhancetheknowledgeofhandlingmultiple tables				K1-K3	
5	AttainagoodpracticalskillofmanagingandretrievingofdatausingData Manipulation Language(DML)				K2-K4	
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 –Create						
Unit:1	DATABASE CONCEPTS				15hours	
Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational DataModel – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling andNormalization: Data Modeling – Dependency – Database Design – Normal forms – DependencyDiagrams– De-normalization – Another ExampleofNormalization.						
Unit:2	ORACLE9i				15hours	
Oracle9i: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors &Help – Alternate Text Editors - SQL *Plus Worksheet - iSQL *Plus. Oracle Tables: DDL: NamingRules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying TableInformation–AlteringanExistingTable–Dropping,Renaming,TruncatingTable–TableTypes –Spooling – Errorcodes.						
Unit:3	WORKINGWITHTABLE				15hours	
Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data fromTable–ArithmeticOperations–restrictingDatawithWHEREclause–Sorting–Revisiting						

Substitution Variables–DEFINE command–CASE structure.Functions and Grouping: Built-in functions–Grouping Data. Multiple Tables: Joins and Set operations: Join–Set operations.		
Unit:4	PL/SQL	15hours
PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types–Other Data Types–Declaration–Assignment operation–Bind variables–Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures–Nested Blocks–SQL in PL/SQL–Data Manipulation–Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.		
Unit:5	PL/SQL COMPOSITE DATA TYPES	12hours
PL/SQL Composite Data Types: Records–Tables–arrays.Named Blocks: Procedures–Functions–Packages –Triggers–Data Dictionary Views.		
Unit:6	Contemporary Issues	3hours
Expert lectures, online seminars -webinars		
	Total Lecture hours	75hours
Text Book(s)		
1	Database Systems using Oracle, Nilesh Shah, 2nd edition, PHI.	
2	E-Book: Diana Lorentz, "Oracle® Database SQL Reference", ORACLE, Dec, 2005.	
3	E-Book: Bill Pribyl, Steven Feuerstein, "Oracle PL/SQL Programming", O'Reilly Media, Inc., 6 th Edition, February 2014.	
Reference Books		
1	Database Management Systems, Majumdar & Bhattacharya, 2007, TMH.	
2	Database Management Systems, Gerald V. Post, 3rd edition, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	http://www.digimat.in/npTEL/courses/video/106105175/L01.html	
2	https://www.tutorialspoint.com/oracle_sql/index.htm	
3		
Course Designed By:		

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	M	M	M	L
CO2	S	S	S	M	S	M	M	M	M	L
CO3	S	S	S	S	S	S	S	S	M	M
CO4	S	S	S	S	S	M	S	S	M	L
CO5	S	S	S	S	S	M	S	S	M	L

*S-Strong; M-Medium; L-Low

Coursecode	VisualBasic			L	T	P	C	
Core/Elective/Supportive	Core:9			6	0	0	4	
Pre-requisite	Knowledgeinprogramminglanguageandoopsconc ept.			Syllabus Version		2021-22 Onwards		
CourseObjectives:								
Themain objectives ofthis courseareto: 1. Themain aimof thecourseisto covervisual basic programming skillsrequired formodernsoftwaredevelopment. 2. Tostudytheadvantages ofControlsavailablewithvisualbasic. 3. Togainabasicunderstanding ofdatabaseaccessand managementusingdatacontrols. 4. Tofacilitatethelearner tocarryoutprojectworks usingthetoolsavailable inVBandMSAccess.								
ExpectedCourseOutcomes:								
Onthesuccessful completion ofthecourse,student willbe ableto:								
1	Demonstratefundamentalskillsinutilizingthetoolsofavisualenvironmentsuch ascommand,menusandtoolbars.						K1	
2	ImplementSDIandMDIapplicationsusingforms,dialogsandothertypesofGUI components.						K2	
3	UnderstandtheconnectivitybetweenVBwithMS-ACCESSdatabase.						K3	
4	Implementthemethodsandtechniquestodevelopprojects.						K4	
5	Attainagoodpracticalskill ofmanagingODBCand DataAccessObjects						K2-K4	
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 -Create								
Unit:1		INTRODUCTIONTO VB				15hours		
GettingStartedwithVB6,ProgrammingEnvironment,workingwithForms,Developinganapplication, Variables, Data types and Modules, procedures and control structures, arrays. WorkingwithControls: Creating and usingcontrols, working with control arrays.								
Unit:2		MENUSINVB				15hours		
Menus,MouseeventsandDialogboxes:Mouseevents,Dialogboxes,MDIandFlexgrid:MDI,UsingtheFl exgrid control.								
Unit:3		ODBCANDDATAACCESSOBJECTS				15hours		
ODBCandDataAccessObjects:DataAccessOptions,ODBC,Remotedataobjects,ActiveX EXEandActiveXDLL:Introduction,CreatinganActiveXEXEComponent,CreatingActiveXDLLCo mponent.								
Unit:4		OBJECTLINKINGANDEMBEDDING				15hours		
Object Linking and Embedding: OLE fundamentals, Using OLE Container Control, Using OLEAutomation objects, OLE Drag and Drop, File and File System Control: File System Controls,AccessingFiles.								
Unit:5		CONTROLSIN VB				12hours		
AdditionalcontrolsinVB:sstabcontrol,settingpropertiesatruntime,addingcontrolstotab,listcontrol,ta bstripcontrol,MSFlexgridcontrol,WhyADO,Establishingreference,Crystaland								

Datareports.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars -webinars		
	TotalLecturehours	75hours
TextBook(s)		
1	Visual Basic 6.0 Programming, Content Development Group, TMH, 8th reprint, 2007. (Unit I to Unit IV)	
2	ProgrammingwithVisualBasic6.0,MohammedAzam,VikasPublishingHouse,FourthReprint,2006. (Unit V)	
3		
ReferenceBooks		
1	GrayCornell(2003),”VisualBasic6fromgroundup”TMH,New Delhi,1stEdition,	
2	DeitelandDeitel,T.R.Nieto(1998),“VisualBasic6 - HowtoProgram”,PearsonEducation.FirstEdition.	
3		
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
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CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	M	M	M	M	M	L
CO2	S	S	S	M	M	M	S	S	M	L
CO3	S	S	S	S	S	M	S	S	S	M
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S

*S-Strong;M-Medium;L-Low

Coursecode		Programming Lab – VB& Oracle	L	T	P	C
Core/Elective/Supportive		CoreLab :6	0	0	6	4
Pre-requisite	Students should have the theoretical knowledge in visual basic and oops concept.		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to:						
<ol style="list-style-type: none"> 1. To develop applications using Graphical User Interface tools. 2. To understand the design concepts. 3. To design and build database systems and demonstrate their competence. 4. To create requirement analysis and specification for software applications. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the concepts of Visual Basic.					K1
2	Learn the advantages of Controls in VB					K2
3	Design and develop the event-driven applications using Visual Basic framework.					K3
4	Apply the knowledge of database methods.					K4
5	Learn basics of PL/SQL and develop programs using Cursors, Exceptions, Procedures and Functions					K6
K1 –Remember; K2 –Understand; K3 –Apply; K4 – Analyze; K5 – Evaluate; K6 –Create						
Programs						36 hours
1. Construction of an Arithmetic Calculator (Simple).						
2. Write simple programs using loops and decision-making statements.						
<ol style="list-style-type: none"> a. Generate Fibonacci series. b. Find the sum of N numbers. 						
3. Write a program to create a menu and MDI Forms.						
4. Write a program to display files in a directory using DriveListBox, DirListBox and FileListBox control and open, edit and save text file using RichText box control.						
5. Write a program to illustrate CommonDialog Control and to open, edit and save text file.						
6. Write a program to implement animation using timers.						
7. Write a simple VB program to accept a number as input and convert it into						
<ol style="list-style-type: none"> a. Binary b. Octal c. Hexa-decimal 						
8. Create a table for Employee details with Employee Number as primary key and following fields: Name, Designation, Gender, Age, Date of Joining and Salary. Insert at least ten rows and perform various queries using any one Comparison, Logical, Set, Sorting and Grouping operators.						
9. Write a PL/SQL to update the rate field by 20% more than the current rate in inventory table which has the following fields: ProNo, ProName and Rate. After updating the table a new field (Alter) called for Number of item and place for values for the new field without using PL/SQL block.						
10. Write a PL/SQL program to implement the concept of Triggers						

11. Write a PL/SQL program to implement the concept "Procedures".	
12. Write a VB program to manipulate the student mark list with an Oracle database connectivity program.	
Total Lecture hours	
36 hours	
Text Book(s)	
1	Visual Basic 6.0 Programming, Content Development Group, TMH, 8 th reprint, 2007. (Unit I to Unit IV)
2	Programming with Visual Basic 6.0, Mohammed Azam, Vikas Publishing House, Fourth Reprint, 2006. (Unit V)
3	E-Book: Bill Pribyl, Steven Feuerstein, "Oracle PL/SQL Programming", O'Reilly Media, Inc., 6 th Edition, February 2014.
Reference Books	
1	Gray Cornell (2003), "Visual Basic 6 from ground up" TMH, New Delhi, 1 st Edition,
2	Deitel and Deitel, T.R. Nieto (1998), "Visual Basic 6 – How to Program", Pearson Education. First Edition.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	
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Course Designed By:	

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	M	L	S	M	M	L
CO3	S	S	S	L	M	M	S	M	S	L
CO3	S	S	S	M	S	M	S	S	S	M
CO4	S	S	S	M	S	M	S	S	M	M
CO5	S	S	S	S	S	S	S	S	S	M

*S-Strong; M-Medium; L-Low

Coursecode	ECommerce		L	T	P	C
Core/Elective/Supportive	Elective-I		6	0	0	4
Pre-requisite	Basic understanding in use of internet in commercial applications	Syllabus Version	2021-22 Onwards			
Course Objectives:						
The main objectives of this course are to: <ol style="list-style-type: none"> 1. To enable the student to learn and understand the E-Commerce strategies. 2. To understand the E-Market and EDI standards and implementations. 3. To study and understand the online payments in E-Commerce applications and other E-Commerce applications used in the internet. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understanding the basics of E-Commerce and its strategies.					K1, K2
2	Knowledge in basics of business strategy, E-Commerce implementation, the credit transaction trade cycle.					K2
3	Understand the E-markets, EDI standards, communication and implementations.					K3
4	Understand the internet, HTML, server side scripting and client side scripting languages, online payments in E-Commerce applications.					K4
5	Knowledge in the internet bookshops, electronic newspapers, virtual auctions, gambling on the Net and e-diversity.					K4
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1		Introduction to E-Commerce			10hours	
The Scope of E-Commerce – Definition-E-Commerce & the Trade Cycle – Electronic Market – Electronic Data Interchange – The Internet Commerce – The E-Commerce in Perspective. Business Strategy: The Value Chain–Supply Chains–Porter’s Value Chain Model–The Inter Organizational Value Chain						
Unit:2		The Introduction to Business Strategy			10hours	
The Introduction to Business Strategy – Strategic Implications of IT – Technology – Business Environment–Business Capability–Existing Business Strategy–Strategy Formulation & Implementation Planning–e-Commerce Implementation–Commerce Evaluation. The Inter Organizational Transactions–The Credit Transaction Trade Cycle. A Variety of Transactions–Pens & Things.						
Unit:3		E-Markets			10hours	
Markets–E-Markets-Usage of E-Markets-Advantages & Disadvantages of E-Markets. EDI: Introduction–Definition-Benefit of EDI–EDI Standards–EDICommunication EDI Implementation– EDI Agreement– EDI Security						
Unit:4		The Internet			12hours	
The Internet–The Development of the Internet–TCP/IP–Internet Components–Uses of the Internet–A Page on the Web: HTML Basics–Introduction to HTML–Further HTML–Client						

SideScripting–ServerSideScripting– HTMLEditors&Editing–TheElementsofE-Commerce :Elements–e-Visibility–Thee-Shop–OnlinePayments-DeliveringtheGoods–Internete- CommerceSecurity .		
Unit:5	E-Business:Introduction	12hours
-TheInternetBookshops–GrocerySupplies-SoftwareSuppliesandSupport–ElectronicNewspapers – The Internet Banking - The Virtual Auctions – Online Share Dealing – Gambling ontheNet – e- Diversity.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars -webinars		
TotalLecturehours		55hours
TextBook(s)		
1	DavidWhiteley,E-Commerce–Strategy,Technology&Applications,TataMcGrawHill.	
2		
ReferenceBook(s)		
1	E-Commerce-An IndianPerspective,P.T.Joseph, S.J.,FourthEdition,PHI2012.	
RelatedOnlineContents[MOOC,SWAYAM, NPTEL, Websitesetc.]		
1		
2		
3		
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	M	L	S	M	M	L
CO3	S	S	S	L	M	M	S	M	S	L
CO3	S	S	S	M	S	M	S	S	S	M
CO4	S	S	S	M	S	M	S	S	M	M
CO5	S	M	M	M	M	S	S	S	S	M

*S-Strong;M-Medium;L-Low

Coursecode	DesignandAnalysisofAlgorithms	L	T	P	C
Core/Elective/Supportive	Elective-I	6	0	0	4
Pre-requisite	Basicknowledgein computeralgorithms	Syllabus Version		2021-22 Onwards	
CourseObjectives:					
Themain objectives ofthis courseareto:					
<ol style="list-style-type: none"> 1. Toenablethestudentslearndivideandconquer,dynamicprogrammingandbacktrackingmethodand apply forreal timeapplications. 2. Tolearnabouthoweffectivelyalgorithmtobedevelopedbyconsideringtimeandspacecomplexities. 					
ExpectedCourseOutcomes:					
Onthesuccessful completion ofthecourse,student willbe ableto:					
1	Rememberingthebasicsofalgorithmandperformance analysisofalgorithms.				K1
2	Knowledgeindivideandconquermethodssearching,sortingandgreedymethod andgeneralmethod.				K2
3	Understandthedynamicprogrammingtechniquesandapply.				K3-K6
4	Knowledgeinbacktrackingproblems andapplytheseproblemsintomany realtimeapplications.				K4-K6
5	Understand and apply the concepts of NP-hard and NP-complex problem, travellingsalesmenproblem and parallel assignment instruction.				K4-K6
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 -Create					
Unit:1	Introduction				10hours
WhatisanAlgorithm?–AlgorithmSpecification– PerformanceAnalysis(SpaceComplexity,TimeComplexity)– RandomizedAlgorithms.AnalysisofAlgorithms:ComputationalComplexity –Average-Case Analysis –Example:AnalysisofQuickSort.					
Unit:2	DivideandConquer				10hours
GeneralMethod–BinarySearch–MergeSort–QuickSort.GreedyMethod:GeneralMethod– KnapsackProblem – Minimum CostSpanning Tree– SingleSourceShortest Path.					
Unit:3	DynamicProgramming				10hours
GeneralMethod–MultistageGraphs–AllPairShortestPath–OptimalBinarySearchTrees–0/1Knapsack- Traveling Salesman Problem–Flow Shop Scheduling.					
Unit:4	Backtracking				12hours
General Method – 8-Queens Problem – S um of Subsets – Graph Coloring – Hamiltonian Cycles – KnapsackProblem.BranchandBound:TheMethod–0/1KnapsackProblem–TravelingSalesperson.					
Unit:5	AlgebraicProblems				12hours
General Method – Evaluation and Interpolation - Modular Arithmetic – Even Faster Evaluation andInterpolation.NP-HardandNP-ComplexProblem:BasicConcepts– TravelingSalespersonDecisionProblem–SchedulingIdenticalProcessors– ImplementingParallelAssignment					

Instructions.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars -webinars		
	TotalLecturehours	55hours
TextBook(s)		
1	EllisHorowitz,SartajSahni,SanguthevarRajasekaran,“FundamentalsofComputerAlgorithms”,Second Edition,Universities Press,2008	
2	Robert Sedgewick, Phillipe Flajolet, “An Introduction to the Analysis of Algorithms”, Addison-WesleyPublishing Company, 1996.	
ReferenceBook(s)		
1	AlfredV.Aho,JohnE. Hocroft,JeffreyD.Ullman,“DataStructuresandAlgorithms”	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
2		
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CourseDesignedBy:		

MappingwithProgrammeOutcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	L	S	M	M	S
CO3	S	S	S	M	M	M	S	M	S	S
CO3	S	S	S	M	S	M	S	S	S	S
CO4	S	S	S	M	S	M	S	S	M	M
CO5	S	M	M	M	M	S	S	S	S	M

*S-Strong;M-Medium;L-Low

Coursecode	WebTechnology		L	T	P	C
Core/Elective/Supportive	Elective:I		6	0	0	4
Pre-requisite	Basicknowledgeinwebserver,browserandwebappliance		Syllabus Version		2021-22 Onwards	
CourseObjectives:						
Themain objectives ofthis courseareto: 1.Oncompletionofthiscourse,astudentwillbefamiliarwithclientserver architectureandableto develop aweb applicationusing javatechnologies. 1.Studentswill gainthe skills andproject-basedexperienceneeded forentry into webapplicationand development careers 3. Understandbesttechnologiesforsolvingwebclient/serverproblems 4. UseJavascriptfordynamiceffects andto validateforminput entry 5. AnalyzetoUseappropriateclient-sideor Server-sideapplications						
ExpectedCourseOutcomes:						
Onthesuccessful completion ofthecourse,student willbe ableto:						
1	UnderstandandanalysetheTCP/IPbasics.					K1
2	UnderstandDomainservername,FTP,TFTP,basicsofWWW,webbrowser architecture.					K2
3	KnowledgeofMicrosoftandjavatechnologies,dynamicwebpages,DHTML,ASP andJSP.					K2-K3
4	Understandingactivewebpages,JavaApplet,Javabean,CORBA,RMIandEDI architecture					K2-K3
5	KnowledgeonXML,XML parser, WAP					K4-K6
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 –Create						
Unit:1	TCP/IP				15hours	
TCP/IP: TCP/IP Basics – Why IP address – Logical Address - TCP/IP Example- The concept of IPaddress–BasicsofTCP–FeaturesofTCP–RelationshipbetweenTCPandIP–PortsandSockets – Active Open and Passive Open - TCP Connections – What makes TCP reliable? – TCPPacketformat -Persistent TCPconnections– UDP – DifferencesbetweenTCP and UDP.						
Unit:2	DNS				12hours	
DNS–E-mail–FTP–TFTP–HistoryofWWW–BasicsofWWWandBrowsing-Local informationontheinternet–HTML–WebBrowserArchitecture–WebPagesandMultimedia– RemoteLogin (TELNET).						
Unit:3	INTRODUCTIONTOWEBTECHNOLOGY				15hours	
IntroductiontoWebTechnology:Webpages–Tiers–Conceptofa Tier–ComparisonofMicrosoft and Java Technologies – Web Pages – Static Web Pages – Plug-ins – Frames – Forms.Dynamic Web Pages: Need – Magic of Dynamic Web Pages – Overview of Dynamic Web PageTechnologies – Overview of DHTML – Common Gateway Interface – ASP – ASP Technology –ASP Example– Modern Trends inASP–JavaandJVM –JavaServlets –JavaServer Pages.						

Unit:4	ACTIVEWEBPAGES	15hours
Active Web Pages: Active Web Pages in better solution – Java Applets – Why are Active WebPages Powerful? – Lifecycle of Java Applets – ActiveX Controls – Java Beans. Middleware andComponent-BasedE-CommerceArchitectures:CORBA–JavaRemoteMethodInvocation–DCOM. EDI: Overview – Origins of EDI – Understanding of EDI – Data Exchange Standards – EDIArchitecture–Significanceof EDI– Financial EDI– EDIand internet.		
Unit:5	XML	15hours
XML:SGML–BasicsofXML–XMLParsers–Needforastandard.WAP:LimitationsofMobile devices – Emergence of WAP – WAP Architecture – WAP Stack – Concerns about WAPandits future– Alternatives to WAP.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars –webinars		
TotalLecturehours		75hours
TextBook(s)		
1	Web Technologies: TCP/IP to Internet Applications Architectures – Achyut S Godbole & AtulKahate,2007,TMH.(UNIT-I: 3.1-3.5,4.1-4.12 UNIT-II: 5.1-5.4,6.1-6.7 UNITIII:8.1-8.1,9.1-9.13 UNITIV: 10.1-10.7,15.1-15.3,16.1-16.8UNIT-V: 17.1-17.4,18.1-18.6)	
ReferenceBooks		
1	InternetandWebTechnologies,Rajkamal,TMH.	
2	TCP/IPProtocolSuite,BehrouzA.Forouzan,3rdedition,TMH.	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
2		
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CourseDesignedBy:		

MappingwithProgrammeOutcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	S	L	L	L	S	S
CO2	S	S	S	M	S	M	L	L	S	S
CO3	S	S	S	L	S	M	M	M	S	S
CO4	S	S	S	M	S	L	M	L	S	S
CO5	S	S	S	L	S	L	M	L	S	S

*S-Strong;M-Medium;L-Low

Coursecode		ASP.NET	L	T	P	C
Core/Elective/Supportive		SkilledBasedSubject - 3	6	0	0	3
Pre-requisite		Basicknowledgeinwebserver,browserandprogramming	Syllabus Version	2021-22 Onwards		
CourseObjectives:						
Themain objectives ofthis courseareto: 1. ToenablethestudentstolearnaboutASP.NETtodevelopwebformswithdatabaseconnectivity,how to do session tracking and management. 2. TolearnaboutwebservicesandtheroleofWSDLandSOAPindevelopingwebservices.						
ExpectedCourseOutcomes:						
Onthesuccessful completion ofthecourse,student willbe ableto:						
1	Understandingthe basics of .Net, development environment. Overview of ASP.NETandprogramflow.					K1-K2
2	KnowledgeonASP.NETandVB.NETandbuilt inobjects.					K2
3	Understandwebforms,ASP.NETconfiguration,stateandsessionmanagements.					K3
4	Understandingscripting object models,activeservercomponentsandcontrols.					K4
5	Knowledgeonwebservices,developingwebapplications,datacentricwebapplicationsusing ADO.NET.					K4-K6
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 -Create						
Unit:1	BASICSOF .NET				10hours	
Getting Setup - what is ASP.NET- Setting up for ASP.NET- The development environment – ASP& ASP.NET. An overview – ASP.NET Programming Languages. Programming Basics: Basics ofProgramming–ProgramFlow–EffectiveCodingTechniques–DesigningApplications.						
Unit:2	ASP.NET with VB				10hours	
How DynamicWebsiteApplicationswork-ProcessingASP.NET withVisualbasic. NET:VB.NETProgrammingLanguageStructures– BuiltinASP.NETObjects&InteractivityTheresponseobject –TheASP Serverobject.						
Unit:3	Webforms&ASP.NET				10hours	
Webforms-ASP.NETConfiguration,ScopeandState:ASP.NETandconfigurationASP.NETandstate– Theapplication object–ASPsessions – Thesession object.						
Unit:4	ASP.NETObjectsandcomponents				12hours	
TheScriptingObjectModel-ActiveServerComponentsandControls–MoreActiveServerComponents.						
Unit:5	Webservices&ASP.NETwithADO.NET				12hours	
Web services & ASP. NET –WSDL & SOAP- Web services Background – ASP.NET &SQLserver- using SQL server –using databases in ASP.NET applications- ActiveX data objects theADO.NETObjectivemodel–coding structured query language.						

Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars -webinars		
TotalLecturehours		55hours
TextBook(s)		
1	DaveMercer,—ASP.NETABeginner’sGuidel, TataMcGraw–HillPub.CompanyLtd,2002	
2	MattJ.Couch,—ASP.NETandVB.NETWebprogramming—,Pearson Education,2002	
ReferenceBook(s)		
1	Kirk Allen Evans, AshwinKamanna, Joel Mueller, —XML and ASP.NET , PearsonEducation,2002.	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
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CourseDesignedBy:		

MappingwithProgrammeOutcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	S	L	L	L	S	S
CO2	S	S	S	M	S	M	L	L	S	S
CO3	S	S	S	L	S	M	M	M	S	S
CO4	S	M	M	M	S	M	M	L	S	S
CO5	S	S	S	L	S	M	M	L	S	S

*S-Strong;M-Medium;L-Low



**Sixth
Semester**

Coursecode	Graphics&Multimedia		L	T	P	C
Core/Elective/Supportive	Core:10		5	0	0	4
Pre-requisite	Basicknowledgein2D,3Dandmultimediafileformats	Syllabus Version	2021-22 Onwards			
CourseObjectives:						
Themain objectives ofthis courseareto: 1. Designandapplytwo dimensionalgraphicsandtransformations. 2. Designandapplythreedimensionalgraphicsandtransformations. 3. ApplyIllumination,colormodelsandclippingtechniquestographics. 4. UnderstoodDifferenttypesofMultimediaFileFormat.						
ExpectedCourseOutcomes:						
Onthesuccessful completion of thecourse,student willbe ableto:						
1	Explainapplications,principles,commonlyusedandtechniquesofcomputergraphicsandalgorithmsforLine-Drawing,Circle-GeneratingandEllipse-Generating.					K2
2	Studentswillgettheconceptsof2Dand3D, Viewing,Curvesandsurfaces,Hidden Line/surfaceeliminationtechniques					K3
3	Studiesconceptsof MultimediaSystems,Text, Audioand Videotools					K3
4	CompressingaudioandvideousingMPEG-1andMPEG-2					K4
5	CreatesAnimationwithspecialeffectsusinalgorithms					K6
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 -Create						
Unit:1	OUTPUTPRIMITIVES				15hours	
Output Primitives: Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Linefunction–Circle-Generatingalgorithms–Ellipse-generatingalgorithms.AttributesofOutputPrimitives: Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes –CharacterAttributes.						
Unit:2	2DGEOMETRICTRANSFORMATIONS				15hours	
2D Geometric Transformations: Basic Transformations – Matrix Representations – CompositeTransformations – Other Transformations. 2D Viewing: The Viewing Pipeline – Viewing Co-ordinateReferenceFrame–Window-to-ViewportCo-ordinateTransformation-2DViewingFunctions– Clipping Operations.						
Unit:3	TEXT				15hours	
Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – Fileformats. Image: Image Types – Seeing Color – Color Models – Basic Steps for Image Processing –Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – DeviceIndependentColorModels–ImageProcessingsoftware–FileFormats–ImageOutputonMonitorand Printer.						
Unit:4	AUDIO				15hours	
Audio:Introduction–Acoustics–NatureofSoundWaves–FundamentalCharacteristics ofSound –Microphone–Amplifier–Loudspeaker–AudioMixer–DigitalAudio–Synthesizers–MIDI–						

Basics of Staff Notation – Sound Card – Audio Transmission – Audio File formats and CODECs – Audio Recording Systems – Audio and Multimedia – Voice Recognition and Response - AudioProcessingSoftware.		
Unit:5	VIDEOANDANIMATION	12hours
Video:AnalogVideoCamera–TransmissionofVideoSignals–VideoSignalFormats–Television Broadcasting Standards– PC Video – Video File Formats and CODECs – VideoEditing– VideoEditingSoftware.Animation:TypesofAnimation–ComputerAssistedAnimation – Creating Movement – Principles of Animation – Some Techniques of Animation –Animation on the Web – Special Effects – Rendering Algorithms. Compression: MPEG-1 Audio –MPEG-1Video -MPEG-2Audio – MPEG-2 Video.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars –webinars		
TotalLecturehours		75hours
TextBook(s)		
1	Computer Graphics, Donald Hearn, M.Pauline Baker, 2nd edition, PHI. (UNIT-I: 3.1-3.6,4.1-4.5& UNIT-II: 5.1-5.4,6.1-6.5)	
2	Principles of Multimedia, Ranjan Parekh, 2007, TMH. (UNIT III: 4.1-4.7,5.1-5.16 UNIT-IV:7.1-7.3,7.8-7.14,7.18-7.20,7.22,7.24,7.26-28UNIT-V: 9.5-9.10,9.13,9.15,10.10-10.13)	
ReferenceBooks		
1	ComputerGraphics,AmarendraNSinha,ArunD Udai,TMH.	
2	Multimedia:MakingitWork,Tay Vaughan,7thedition,TMH.	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
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CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	S	S	S	M
CO2	S	S	S	M	S	M	M	M	S	M
CO3	S	M	M	M	S	M	M	M	S	M
CO4	S	S	S	M	S	M	M	M	S	M
CO5	S	S	S	M	S	M	S	S	S	M

*S-Strong;M-Medium;L-Low

Coursecode		ProjectWorkLab	L	T	P	C
Core/Elective/Supportive		Core:11	0	0	5	6
Pre-requisite	Students should have the strong knowledge in any one of the programming languages in this course.		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to: <ol style="list-style-type: none"> 1. To understand and select the task based on their core skills. 2. To get the knowledge about analytical skill for solving the selected task. 3. To get confidence for implementing the task and solving the real time problems. 4. Express technical and behavioral ideas and thought in oral settings. 5. Prepare and conduct oral presentations 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Formulate a real world problem and develop its requirements develop a design solution for a set of requirements.					K3
2	Test and validate the conformance of the developed prototype against the original requirements of the problem.					K5
3	Work as a responsible member and possibly a leader of a team in developing software solutions.					K3
4	Express technical ideas, strategies and methodologies in written form. Self-learn new tools, algorithms and techniques that contribute to the software resolution of the project.					K1-K4
5	Generate alternative solutions, compare them and select the optimum one.					K6
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
AIM OF THE PROJECT WORK						
<ol style="list-style-type: none"> 1. The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied. 2. Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts. 3. The project work should be compulsorily done in the college only under the supervision of the department staff concerned. 						
Viva Voce						
<ol style="list-style-type: none"> 1. Viva-Voce will be conducted at the end of the year by both Internal (Respective Guides) and External Examiners, after duly verifying the Annexure Report available in the College, for a total of 150 marks at the last day of the practical session. 2. Out of 150 marks, 60 marks for CIA and 90 for CEE (60 evaluation of project report + 30 Viva Voce). 						

ProjectReportFormat

PROJECTWORK

TITLE OF THE DISSERTATION

Bonafide Work Done by
STUDENT
NAME REG.NO.

Dissertation submitted in partial fulfillment of the requirements for the award of
<Name of the Degree>
of Bharathiar University, Coimbatore-46.

College Logo

Signature of the Guide

Signature of the HOD

Submitted for the Viva-Voce Examination held on _____

Internal Examiner

External Examiner

Month-Year

CONTENTS

Acknowledgement

Contents

Synopsis

1. Introduction

- 1.1 Organization Profile
- 1.2 System Specification
 - 1.2.1 Hardware Configuration
 - 1.2.2 Software Specification

2. System Study

- 2.1 Existing System

<p>2.1.1 Drawbacks</p> <p>2.2 Proposed System</p> <p>2.2.1 Features</p> <p>3. System Design and Development</p> <p>3.1 File Design</p> <p>3.2 Input Design</p> <p>3.3 Output Design</p> <p>3.4 Database Design</p> <p>3.5 System Development</p> <p>3.5.1 Description of Modules (Detailed explanation about the project work)</p> <p>4. Testing and Implementation</p> <p>5. Conclusion</p> <p>Bibliography</p> <p>Appendices</p> <p>A. Data Flow Diagram</p> <p>B. Table Structure</p> <p>C. Sample Coding</p> <p>D. Sample Input</p> <p>E. Sample Output</p> <p>Course Designed By:</p>

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	M	S	S	S	S
CO2	S	S	S	S	S	M	S	S	S	S
CO3	S	S	S	M	M	S	S	S	S	S
CO4	S	S	S	M	S	S	S	S	S	S
CO5	S	S	S	M	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low

Coursecode		ProgrammingLab– Graphics&Multimedia	L	T	P	C
Core/Elective/Supportive		CoreLab :7	0	0	5	4
Pre-requisite	Students should have the basic knowledge on C and C++ to do computer graphics and multimedia applications.		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to:						
<ol style="list-style-type: none"> 1. To learn the basic principles of 2-dimensional computer graphics. 2. Provide an understanding of how to scan convert the basic geometrical primitives, how to transform the shapes to fit them as per the picture definition. 3. Provide an understanding of mapping from a world coordinate to device coordinates, clipping and projections. 4. To be able to discuss the application of computer graphics concepts in the development of computer games, information visualization and business applications. 5. To comprehend and analyze the fundamentals of animation, virtual reality, underlying technologies, principles and applications. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basic concepts of computer graphics.					K1
2	Design scan conversion problems using C and C++ programming.					K2
3	Apply clipping and filling techniques for modifying an object.					K3
4	Understand the concepts of different type of geometric transformation of objects in 2D.					K4
5	Understand and develop the practical implementation of modeling, rendering, viewing of objects in 2D					K6
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5-Evaluate; K6-Create						
Programs						36hours
Graphics						
1. Write a program to rotate an image.						
2. Write a program to drop each word of a sentence one by one from the top.						
3. Write a program to draw a line using DDA Algorithm.						
4. Write a program to move a car with sound effect.						
5. Write a program to bounce a ball and move it with sound effect.						
6. Write a program to test whether a given pixel is inside or outside of a polygon.						
Multimedia						
7. Create Sun Flower using Photoshop.						
8. Animate Plane flying in the Clouds using Photoshop.						
9. Create Plastic Surgery for the Nose using Photoshop.						
10. Create See-through text using Photoshop.						
11. Create a Web Page using Photoshop.						
12. Convert Black and White Photo to Color Photo using Photoshop.						
Total Lecture hours						36hours

TextBook(s)	
1	
2	
ReferenceBooks	
1	
2	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]	
1	
2	
3	
CourseDesignedBy:	

MappingwithProgrammeOutcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	M	L	L	M	L
CO2	S	S	S	M	M	M	M	M	M	L
CO3	S	S	S	M	S	M	M	M	M	L
CO4	S	S	S	S	S	M	M	M	M	M
CO5	S	S	S	S	S	M	S	S	S	M

*S-Strong;M-Medium;L-Low



Coursecode	Computer Networks		L	T	P	C
Core/Elective/Supportive	Elective:II		5	0	0	4
Pre-requisite	Students should have the knowledge on computer connectivity and connectivity peripherals.		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to:						
<ol style="list-style-type: none"> 1. To identify various components in a data communication system and understand state-of-the-art in network protocols, architectures and applications. 2. To enable students through the concepts of computer networks, different models and their involvement in each stage of network communication. 3. To educate the concepts of terminology and concepts of the OSI reference model and the TCP/IP reference model and protocols such as TCP, UDP and IP. 4. To be familiar with the concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks. 5. Introduce the student to network routing for IP networks and how a collision occurs and how to solve it and how a frame is created and character count of each frame. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Remember the organization of computer networks, factors influencing computer network development and the reasons for having variety of different types of networks.					K1
2	Understand Internet structure and can see how standard problems are resolved and the use of cryptography and network security.					K2
3	Apply knowledge of different techniques of error detection and correction to detect and solve error bit during data transmission.					K3
4	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies					K4
5	Knowledge about different computer networks, reference models and the functions of each layer in the models					K2-K4
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1	BASIC SOF NETWORKS AND OSIMODEL				15hours	
Network Hardware: LAN – WAN – MAN – Wireless – Home Networks. Network Software: Protocol Hierarchies – Design Issues for the Layers – Connection-oriented and connectionless services – Service Primitives – The Relationship of services to Protocols. Reference Models: OSIReferenceModel–TCP/IPReferenceModel–ComparisonofOSIandTCP/IP–CritiqueofOSI and protocols– CritiqueoftheTCP/IPReferenceModel.						
Unit:2	PHYSICAL LAYER				15hours	
PHYSICAL LAYER - Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. Wireless Transmission: Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light Waves. Communication Satellites: Geostationary, Medium-Earth Orbit, Low Earth-orbit Satellites – Satellites versus Fiber.						
Unit:3	DATA-LINK LAYER				15hours	
DATA-LINK LAYER: Error Detection and correction – Elementary Data-link Protocols – Sliding						

WindowProtocols.MEDIUM-ACCESSCONTROLSUBLAYER:MultipleAccessProtocols–Ethernet–Wireless LANs–Broadband Wireless –Bluetooth.		
Unit:4	NETWORKLAYER	15hours
NETWORKLAYER:Routingalgorithms–CongestionControlAlgorithms.TRANSPORTLAYER:Elements ofTransport Protocols–Internet Transport Protocols:TCP.		
Unit:5	APPLICATIONLAYER	12hours
APPLICATIONLAYER:DNS–E-mail.NETWORKSECURITY:Cryptography–SymmetricKeyAlgorithms– PublicKey Algorithms– Digital Signatures.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars -webinars		
	TotalLecturehours	75hours
TextBook(s)		
1	Computer Networks, Andrew S. Tanenbaum, 4th edition, PHI. (UNIT-I:1.2-1.4 UNIT-II:2.2-2.4UNIT-III:4.2-4.6UNIT-IV:5.2,5.3,6.2,6.5 UNIT-V:7.1,7.2,8.1-8.4)	
ReferenceBooks		
1	DataCommunicationandNetworks,AchyutGodbole,2007,TMH.	
2	ComputerNetworks:Protocols,Standards,andInterfaces,UylessBlack,2nded,PHI	
3		
RelatedOnlineContents[MOOC,SWAYAM, NPTEL, Websitesetc.]		
1		
2		
3		
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	L	S	M	L	M	S	S
CO2	S	M	S	L	S	M	L	M	S	S
CO3	S	M	S	L	S	M	L	M	S	S
CO4	S	M	S	L	S	M	L	M	S	S
CO5	S	M	S	L	S	M	L	M	S	S

*S-Strong;M-Medium;L-Low

Coursecode	SoftwareQualityAssurance		L	T	P	C
Core/Elective/Supportive	Elective:II		5	0	0	4
Pre-requisite	BasicknowledgeinSoftwareprojects		Syllabus Version		2021-22 Onwards	
CourseObjectives:						
Themain objectives ofthis courseareto: <ol style="list-style-type: none"> 1. Toenable thestudents tolearntheConcepts andPrinciples ofSQA. 2. Tolearn theprinciplesofSQAandmust be ableto judge thequality of software. 3. Tolearn 						
ExpectedCourseOutcomes:						
Onthesuccessfulcompletion of thecourse, studentwill beable to:						
1	Understandthebasicssoftwarequality,modeling,andsoftwarequalityassuranceplanning software.					K1,K2
2	Knowledgeonsoftware qualityassuranceplan,quality tasksand documentation.					K2, K3
3	Understandthestandards,practices,metrics,softwareinspectionprocess,ISOCMM.					K3
4	Understandthetoolsand techniquesinsoftwarequalitycontrol,maintenanceandtraining,risk management.					K3
5	Knowledge in software quality standards and standard ISO 9000 model and itsweakness,SPICE.					K4
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 –Create						
Unit:1	Introduction toSoftwareQuality				15hours	
Introduction to software quality – Software modeling – Scope of the software quality program – Establishing quality goals – Purpose, quality of goals – SQA planning software – Productivity anddocumentation.						
Unit:2	SoftwareQualityAssurancePlan				15hours	
Softwarequalityassuranceplan–PurposeandScope,Softwarequalityassurancemanagement–Organization– Quality tasks– Responsibilities –Documentation.						
Unit:3	Standards,PracticesandManagement				15hours	
Standards,Practices,ConventionsandMetrics,ReviewsandAudits–Management,Technical review–Softwareinspectionprocess–Walkthroughprocess–Auditprocess–Testprocesses–ISO,CMM compatibility– Problemreporting andcorrectiveaction.						
Unit:4	SoftwareQualityControlandManagement				15hours	
Tools,Techniquesandmethodologies,Codecontrol,Mediacontrol,Suppliercontrol,Recordscollection, Maintenanceand retention, Training andrisk management.						
Unit:5	Standards				12hours	
ISO9000model,CMMmodel,Comparisons,ISO9000weaknesses,cmmweaknesses,SPICE– Softwareprocess improvement and capability determination.						

Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars –webinars		
	TotalLecturehours	75hours
TextBook(s)		
1	MordechaiBen,MeachemandGarryS.Marliss,SoftwareQuality– ProducingPractical,ConsistentSoftware,InternationalThompson Computer Press, 1997	
2	Watt.S.Humphrey,ManagingSoftwareProcess,AddisonWesley,1998.	
ReferenceBooks		
1	Philip.B.Crosby,QualityisFree:TheArtofMakingQualityCertain,MassMarket,1992.	
2		
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
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3		
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	L	S	S	S	M	M
CO2	S	S	S	M	L	M	S	M	S	S
CO3	S	S	S	L	L	M	S	M	S	S
CO4	S	S	M	L	M	M	S	M	S	S
CO5	S	M	S	L	L	M	S	M	S	S

*S-Strong;M-Medium;L-Low

Coursecode	Management Information Systems		L	T	P	C
Core/Elective/Supportive	Elective-II		5	0	0	4
Pre-requisite	Basics of information management and organization structure		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to:						
<ol style="list-style-type: none"> 1. To enable the student to learn the management information system concepts. 2. To study the organization structure, development of MIS, applications of MIS and DSS. 3. To learn the business process reengineering, data warehouse and electronic business technology. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the management information system concept, role of MIS and approaches to management.					K2
2	Understand the organization structure and the basics of MIS.					K2, K3
3	Understand and analyse the system design, development of MIS, applications of MIS and decision support systems.					K3
4	Understand the enterprise management systems, database management, OOT and client server architecture.					K4
5	Knowledge in business process reengineering, data warehouse and electronic business technology.					K4
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1	Introduction				15hours	
MIS Concept – MIS Definition – Role of the MIS – Impact of the MIS – MIS and Computer. Role and Importance of Management – Introduction Approaches to Management – Functions of the Manager – Management as a Control System – Process of Management						
Unit:2					15hours	
Organization Structure and Theory – Strategic Management of Business: Basics of Management Information Systems: Decision Making – Information Systems.						
Unit:3					15hours	
System Analysis and Design – Development of MIS – Choice of Information Technology – Applications of Management Information System – Decision Support Systems						
Unit:4					15hours	
Enterprise Management Systems – Technology of Information Systems – Database Management Systems – Object Oriented Technology (OOT): Conceptual Presentation – Client Server Architecture.						
Unit:5					12hours	
Networks – Business Process Re-Engineering (BPR) – Data Warehouse: Architecture to						

Implementation–ElectronicBusinessTechnology.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars –webinars		
	TotalLecturehours	75hours
TextBook(s)		
1	W.S.Jawadekar,ManagementInformationSystems,2ndEdition,TataMcGrawHill	
2		
ReferenceBooks		
1	RobertSchultheis,MarySumner,ManagementInformationSystem,4thEdition,TMH	
2		
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	L	S	S	S	M	M
CO2	S	S	S	M	L	M	S	M	S	S
CO3	S	S	S	L	L	M	M	M	S	S
CO4	S	S	S	L	M	M	M	M	S	S
CO5	S	M	S	L	L	M	M	M	S	S

*S-Strong;M-Medium;L-Low

Coursecode	WirelessMobileCommunications		L	T	P	C
Core/Elective/Supportive	Elective-II		5	0	0	4
Pre-requisite	Basics of computer network communications		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to: 1.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basics of wireless communication systems, trends in cellular radio and personal communications and modern wireless communication systems.					K2
2	Knowledge in wireless transmission, medium access control, telecommunication systems.					K2, K3
3	Understand the design fundamentals, channel assignment strategies and improving the coverage and capacity of cellular networks.					K2, K3
4	Understand the wireless networking, traffic routing in wireless networks, wireless data services and protocols for network access.					K2-K4
5	Knowledge in wireless systems standards and scripting language for wireless communications.					K2-K4
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1	Introduction				15hours	
Introduction to Wireless Communication Systems: Evolution of Mobile Radio Communication - Applications - Comparison of common wireless Communication Systems - Trends in Cellular Radio and Personal Communications-Modern wireless Communication Systems						
Unit:2	Wireless Transmission				15hours	
Wireless Transmission: Frequencies for Radio transmission - Signals - Antennas - Signal Propagation - Multiplexing - Modulation - Spread Spectrum - Medium access control: Specialized MAC - SDMA - FDMA - TDMA - CDMA - FHMA - Radio Packet. TeleCommunication Systems : GSM - DECT - TETRA - UTMS-PACS - Personal Handy Phone System (PHS) - Pacific Digital Cellular (PDC) and IMT 2000.						
Unit:3	Design fundamentals				15hours	
The Cellular Concept - System Design fundamentals : Introduction - Frequency Reuse - Channel Assignment Strategies - Interference and System capacity - Trunking and Grade of Service - Improving coverage & Capacity in Cellular Systems.						
Unit:4	Wireless Networking				15hours	
Wireless Networking: Introduction to wireless Networks - Differences between wireless and fixed telephone Networks - Development of Wireless Networks - Traffic Routing in Wireless Networks - Wireless Networks - Wireless Data Services - CCS - ISDN - Signaling system No: 7 (SS7) - PCS / PCNs - Protocols for Network Access - Network Databases.						

Unit:5	Wireless Systems and Standards	12hours
Wireless Systems and Standards: AMPS and ETACS - CDMA Digital Cellular standard (15 – 95) - Reverse CDMA channel- Scripting languages for Wireless Communication- An overview- components.		
Unit:6	Contemporary Issues	3hours
Expert lectures, online seminars – webinars		
Total Lecture hours		75hours
Text Book(s)		
1	Odore W. Rapport - Wireless Communications - Principles and Practice, Second Edition, 2002, Pearson Education.	
2	Jochen Schillr- Mobile Communication, Addison Wesley, 2000.	
Reference Books		
1	Stallings– Wireless Communications & Networks, Pearson Education	
2	GARG– Wireless Network Evolution :2G to3G, Pearson Education.	
3	Richharia– Mobile Satellite Communications: Principles and Trends, Pearson Education	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
Course Designed By:		

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	M	S	S	S	M	M
CO2	S	S	S	M	M	M	S	M	S	S
CO3	S	S	S	M	M	M	M	M	S	S
CO4	M	S	S	M	M	M	M	M	S	S
CO5	M	M	S	M	M	M	M	M	S	S

*S-Strong; M-Medium; L-Low

Coursecode	ComponentTechnologies	L	T	P	C
Core/Elective/Supportive	Elective–III	5	0	0	4
Pre-requisite	Basicsofinformationsystemanddistributedsystem	Syllabus Version		2021-22 Onwards	
CourseObjectives:					
Themain objectives ofthis courseareto: 1. Toenablethestudentstolearn theconceptsof componenttechnologies. 2. TolearntheCORBAarchitectureandservices,CCRBAandCORBA migrationprocess.					
ExpectedCourseOutcomes:					
Onthesuccessful completion ofthecourse,student willbe ableto:					
1	Understandthe basicsofinformationsystem, overviewof CORBA.				K2
2	Understand the language mapping, OLE integration, CCRBA services, information,task,systemmanagementand infrastructureservices.				K3
3	Knowledgeonfacilitiesanddomains,OMGprocessandrelationshipwithother technologies.				K3
4	UnderstandtheCORBA migrationprocess,softwarearchitectureand applicationdesignusing software architect II.				K4
5	Knowledgeonproblem andobjectivestandard basedprofile, businessobjectsandprocessand interfacemigration.				K6
K1-Remember; K2-Understand; K3-Apply;K4-Analyze; K5-Evaluate;K6–Create					
Unit:1	Introduction	15hours			
Informationssystem-AnalyzingtheScenariochallenges-CORBAoverview-Concepts-Overview of CORBA IDL - IDL Tutorial Conversion of OO design to IDL - IDL Guidelines - OverviewofCORBAandStandardObjectmodel-Architecture- Clients&ObjectImplementationinterfaceand implementation.					
Unit:2	ManagementServices	15hours			
Languagemapping-Portabilityandinteroperability-OLEintegration-CCRBAservices-Information Management Services - Task Management- System Management - Infrastructure ofServices.					
Unit:3	Facilities, Domains and Relationship with otherTechnologies	15hours			
Facilitiesanddomains-horizontal-Verticalfacilities-LeveragingtheOMGProcess-Relationshipwith othertechnologies.					
Unit:4	SoftwareArchitecture	15hours			
TheCORBAmigrationprocess-softwareArchitecture-ApplicationsDesignusingsoftwareArchitectii					
Unit:5	Migration CaseStudies	12hours			

Migrationcasestudies-ProblemandObjectivestandardbasedProfile-Projectcontext-Businessobjectsand Process-Interfacemigration.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars –webinars		
TotalLecturehours		75hours
TextBook(s)		
1	InsideCORBA—DistributedObjectStandardsandApplicationsThomasJ.owtray,William A.Roh. AddisonWesley1999.	
2		
ReferenceBooks		
1		
2		
3		
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	M	S	S	S	M	M
CO2	S	S	S	M	M	M	S	M	S	S
CO3	S	S	S	M	M	M	M	M	S	S
CO4	S	S	S	M	M	M	M	M	S	S
CO5	S	S	S	M	M	M	M	M	S	S

*S-Strong;M-Medium;L-Low

Coursecode	Mastering LAN & Troubleshooting		L	T	P	C
Core/Elective/Supportive	Elective-III		5	0	0	4
Pre-requisite	Basics of computer networks		Syllabus Version		2021-22 Onwards	
Course Objectives:						
The main objectives of this course are to: <ol style="list-style-type: none"> 1. To enable the student to learn LAN setup and troubleshooting techniques. 2. To understand the peripheral devices and controllers. 3. To obtain knowledge in installation steps and diagnostic tools. 						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understanding the basics of computer organization, interconnection of devices, I/O data transfer and DMA.					K2
2	Understand the peripheral devices floppy drive controller, hard disk controller, display adapter, CRT controller, and printer controller.					K2, K3
3	Understand the motherboard circuits, functions, intercommunications, SMPS.					K3
4	Knowledge on installation planning, practice, HD upgradation and preventive maintenance.					K4
5	Knowledge on computer faults, types of faults, troubleshooting in printer, monitor, motherboard, etc, diagnostic tools.					K4
K1-Remember; K2-Understand; K3-Apply; K4-Analyze; K5 -Evaluate; K6 -Create						
Unit:1	INTRODUCTION				15hours	
PC- Hardware overview Introduction to computer organization-Memory-PC family-PC hardware interconnections between Boxes- Inside the boxes:- motherboard, daughter boards, floppy disk drive, HDD, speaker, mode switch, front panel indicators & Control-mother board logic memory space-I/O port address-wait state-interrupts-I/O data transfer-DMA channels-POST sequence						
Unit:2	PERIPHERAL DEVICES				15hours	
Floppy drive controller-Overview-Disk format-FDC system interface-FDD interface Hard Disk controller-overview-Disk Drives and interface-controller post description Hard disk card-Hard disk format. Display Adapter:-CRT display- CRT controller principle -CRT controller 6845 Printer controller:- Centronics interface-programming sequence-Hardware overview printer-sub assemblers.						
Unit:3	MOTHERBOARD CIRCUITS				15hours	
Motherboard functions-functional units and intercommunications:- Reset logic-CPU nucleus logic-DMA logic-Wait state logic-NM logic-speaker logic-keyboard interface-SMPS.						
Unit:4	INSTALLATION AND MAINTENANCE				15hours	
Introduction-pre installation planning-installation practice-routine checks-special configuration memory upgradation-HD upgradation-DOS command (Internal and external). Preventive maintenance-system usage.						

Unit:5	TROUBLESHOOTING	12hours
Computer faults-nature of faults -types of faults -diagnostic programs and tools-fault elimination-systematic trouble shooting procedure mother board problem-serial port problems-FDC, HDC,displayproblems-displayadapter-printer problem -monitorproblems, HDC,FDCproblems.		
Unit:6	ContemporaryIssues	3hours
Expertlectures,onlineseminars –webinars		
	TotalLecturehours	75hours
TextBook(s)		
1	B.Govindaraulu-"IBMPCandClones",TataMcGrawHill Co.1995	
2	RobertCBrenner -"IBMPCTrouble shootingand Repairguide", BPBpublications.	
ReferenceBooks		
1	Winn&Rosch -"Hardware Bible", Tecmedia	
2	Zacker – —Upgrading & Trouble shooting Networks – the complete referencel, Tata McGraw Hilledition.	
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]		
1		
CourseDesignedBy:		

MappingwithProgrammeOutcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	S	S	S	M	M
CO2	S	S	S	M	S	M	S	M	S	S
CO3	S	S	S	M	S	M	M	M	S	S
CO4	S	S	S	M	S	M	M	M	S	S
CO5	S	S	S	M	S	M	M	M	S	S

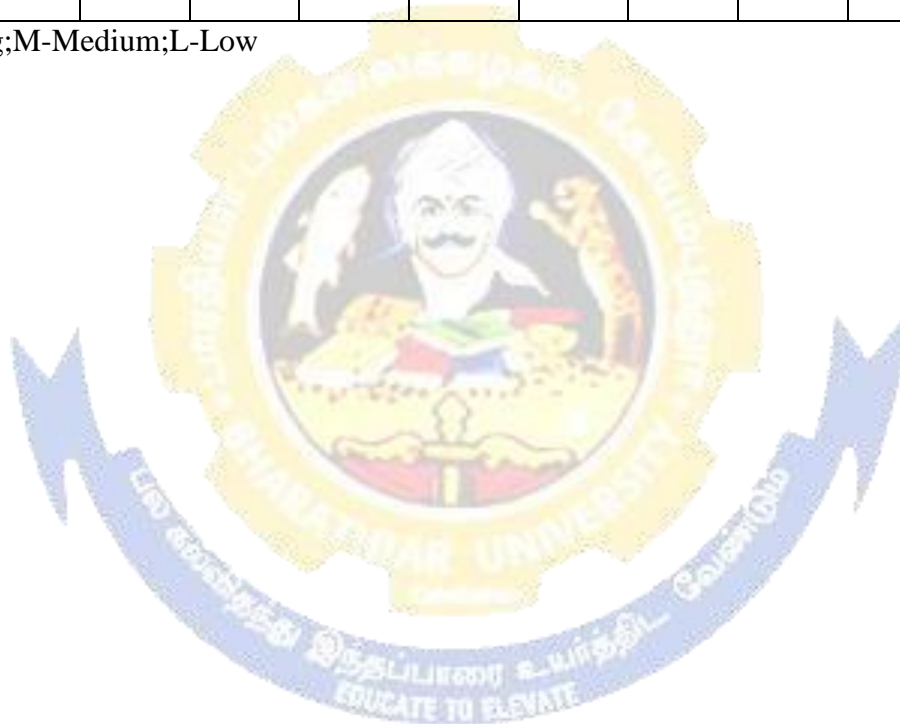
*S-Strong;M-Medium;L-Low

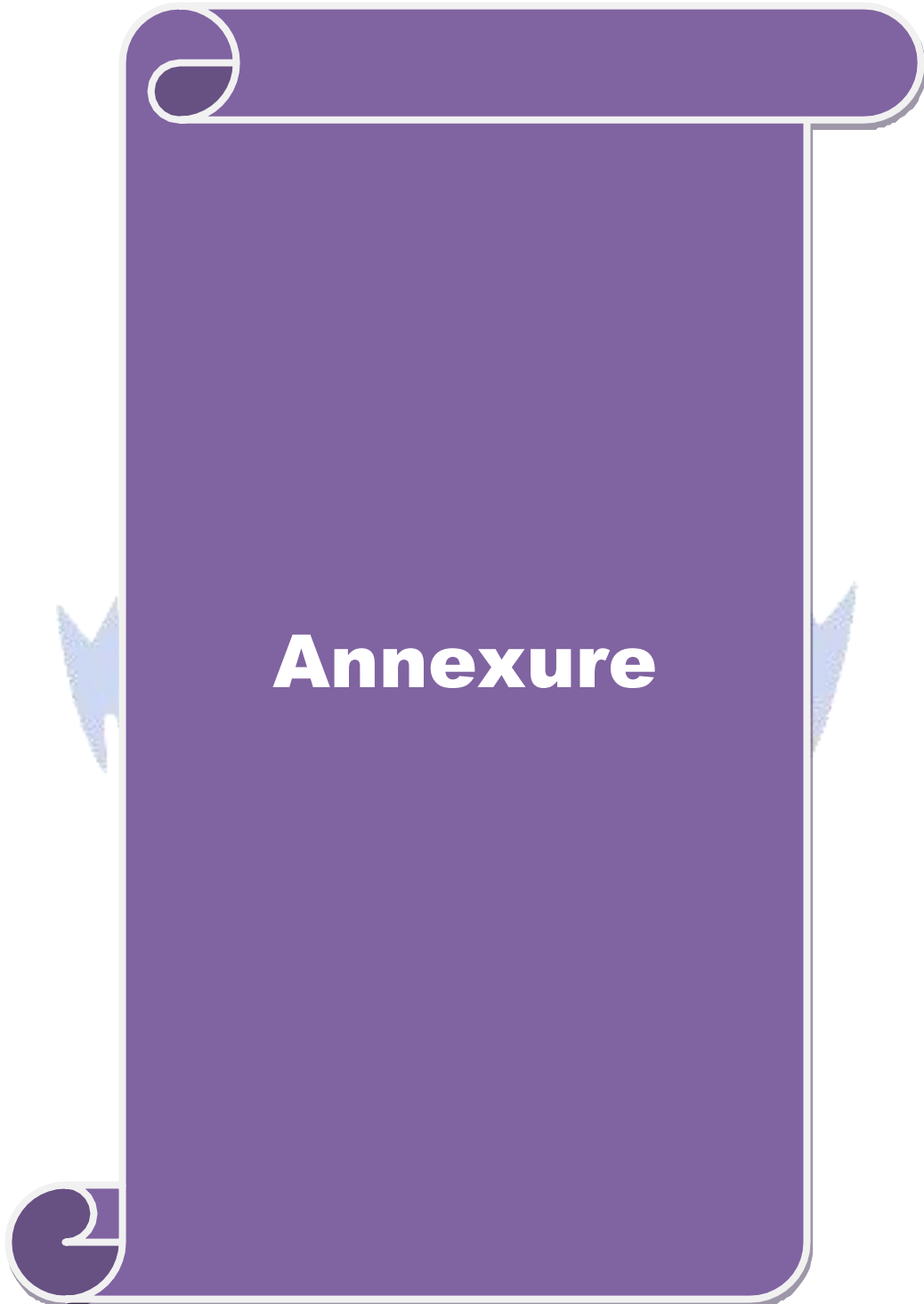
Coursecode		ASP.NET Lab	L	T	P	C
Core/Elective/Supportive		SkilledBasedSubject4(Lab)	3	0	0	3
Pre-requisite	StudentsshouldhaveprogrammingskillinASP.NET		Syllabus Version		2021-22 Onwards	
CourseObjectives:						
Themain objectives of this courseareto: 1. ToenablethestudentstolearnaboutASP.NETtodevelopwebformswithdatabaseconnectivity,how to do session tracking and management. 2. TolearnaboutwebservicesandtheroleofWSDLandSOAPindevelopingwebservices.						
ExpectedCourseOutcomes:						
Onthesuccessful completion of thecourse,student willbe ableto:						
1	Understandingthebasicsof.Net,developmentenvironment.OverviewofASP.NET andprogramflow.					K1-K2
2	KnowledgeonASP.NETandVB.NETandbuilt inobjects.					K2
3	Understandwebforms,ASP.NETconfiguration,stateandsessionmanagements.					K3
4	Understandingscriptingobjectmodels,activeservercomponentsandcontrols.					K4
5	Knowledgeonwebservices,developingwebapplications,datacentricwebapplicationsusing ADO.NET.					K4-K6
K1-Remember; K2-Understand; K3-Apply;K4-Analyze;K5 -Evaluate; K6 -Create						
1.Designa personalwebpageusingASP.						
2.Designa data entryform inASP						
3.WriteaPrograminASPtogetdatausingaform,validatethedataandreturnsthesamedataforcorrectionif any using the same form.						
4.Writeaprogramin ASP to displaytheSessionproperties.						
5.Writeaprogram inASPthat makes useofAd Rotatorcomponent.						
6.Writeaprogram in ASP that makesuse ofBrowserCapabilities component.						
7.Writeaprogramin ASP that makesuse ofContent Rotatorcomponent.						
8.Writeaprogramin ASP that makesuse ofpagecountercomponent.						
9.Writeaprogram inASPto getthe dataofstudentsusing forms andstores themin database.						
10.WriteaprograminASP toperform recordnavigationusing aform.						
			TotalLecturehours		hours	
TextBook(s)						
1	DaveMercer,—ASP.NETABeginner’sGuidel, TataMcGraw–HillPub.CompanyLtd,2002					
2	MattJ.Couch,—ASP.NETandVB.NETWebprogramming—, Pearson Education,2002					
ReferenceBooks						
1	KirkAllenEvans,AshwinKamanna,JoelMueller,—XMLandASP.NET, PearsonEducation,2002.					
RelatedOnlineContents[MOOC,SWAYAM,NPTEL,Websitesetc.]						

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2	
CourseDesignedBy:	

MappingwithProgrammeOutcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	S	L	L	L	S	S
CO2	S	S	S	M	S	M	L	L	S	S
CO3	S	S	S	L	S	M	M	M	S	S
CO4	S	M	M	M	S	M	M	L	S	S
CO5	S	S	S	L	S	M	M	L	S	S

*S-Strong;M-Medium;L-Low





BHARATHIAR UNIVERSITY :: COIMBATORE
641046 DEPARTMENT OF SOFTWARE SYSTEM

MISSION

- ✓ To develop IT professionals with ethical and human values.
- ✓ To organize, connect, create and communicate mathematical ideas effectively, through industry 4.0.
- ✓ To provide a learning environment to enhance innovations, problem solving abilities, leadership potentials, team-spirit and moral tasks.
- ✓ To nurture the research values in the developing areas of Computer Science and interdisciplinary fields.
- ✓ Promote inter-disciplinary research among the faculty and the students to create state-of-art research facilities.
- ✓ To promote quality and ethics among the students.
- ✓ Motivate the students to acquire entrepreneurial skills to become global leaders.

