

DEPARTMENT OF COMPUTER SCIENCE

**Nallamuthu Gounder Mahalingam College
(Autonomous)
(An ISO 9001:2008 Certified Institution)
Re-Accredited with 'A' Grade by NAAC
Pollachi-642001**



SYLLABUS

**B. Sc. COMPUTER SCIENCE
BATCH 2017-2020**

B.Sc. – COMPUTER SCIENCE DEGREE COURSE
(FOR THE CANDIDATES ADMITTED FROM THE ACADEMIC YEAR 2017 ONWARDS)
I to IV SEMESTERS : SCHEME OF EXAMINATIONS

Part	Course Code	Title of the Paper	Hrs	Dur. Hrs	MAX.MARKS			Credits
					CIA	ESE	Total	
<u>I SEMESTER</u>								
I	17UTL101/ 17UHN101/ 17UFR101	Tamil Paper-I/ Hindi Paper-I/ French Paper-I	6	3	25	75	100	3
II	17UEN101	English Paper-I	6	3	25	75	100	3
III	17UCS101	Core I: Programming in C	4	3	25	75	100	4
	17UCS102	Core II: Digital Computer fundamentals and organization	4	3	25	75	100	4
	17UCS1A1	Allied-1: Mathematics-I	4	3	25	75	100	4
	17UCS103	Core Lab I: Programming Lab in C	4	3	20	30	50	2
IV	17HEC101	Human Excellence: Personal Values& SKY Yoga Practice-1	1	2	25	25	50	1
	17UHR101	Human Rights in India	1	2	-	50	50	2
V		Extension Activities (NSS, NCC, Sports & Games)						
Total							650	23
<u>II SEMESTER</u>								
I	17UTL202/ 17UHN202/ 17UFR202	Tamil Paper-II/ Hindi Paper-II/ French Paper-II	6	3	25	75	100	3
II	17UEN202	English Paper – II	5	3	25	75	100	3
III	17UCS204	Core III: Object Oriented Programming Using C++	4	3	25	75	100	4
	17UCS205	Core IV: Data and File Structure	4	3	25	75	100	4
	17UCS2A2	Allied -2: Mathematics-II (Discrete Mathematics)	4	3	25	75	100	4
	17UCS206	Core Lab II: Programming Lab in C++	4	3	20	30	50	2
IV	17HEC202	Human Excellence: Family Values& SKY Yoga Practice-2	1	2	25	25	50	1
	17EVS201	Environmental Studies	2	2	-	50	50	2
V		Extension Activities (NSS, NCC, Sports & Games)						
Total							650	23

Part	Course Code	Title of the Paper	Hrs	Dur. Hrs	MAX.MARKS			Credits
					CIA	ESE	Total	
III SEMESTER								
III	17UCS307	Core V: Java Programming	4	3	25	75	100	4
	17UCS308	Core VI: Relational Database Management System and Oracle	5	3	25	75	100	4
	17UCS309	Core VII: Operating System	4	3	25	75	100	4
	17UCS3A3	Allied -3 : Computer Based Optimization Techniques	5	3	25	75	100	4
	17UCS310	Core Lab III: Programming Lab in Java	5	3	20	30	50	2
	17UCS311	Core Lab IV: Programming Lab in RDBMS	5	3	20	30	50	2
IV	17HEC303	Human Excellence Paper: Professional Values& SKY Yoga Practice-3	1	2	25	25	50	1
	17UCS3N1/ 17UCS3N2	Non-Major Elective Paper-I Photoshop Lab/ Advanced Applications in MS Excel Lab	1	2	-	50	50	2
V		Extension Activities (NSS, NCC, Sports & Games)						
Total							600	23
IV SEMESTER								
III	17UCS412	Core VIII: . NET Programming	4	3	25	75	100	4
	17UCS413	Core IX: Data Communication and Computer Networks	4	3	25	75	100	4
	17UCS414	Core X: Software Engineering	4	3	25	75	100	4
	17UCS4A4	Allied -4 : Accountancy for Decision Making	6	3	25	75	100	4
	17UCS415	Core Lab V: . NET Programming Lab	5	3	20	30	50	2
	17UCS416	Core Lab VI: Multimedia Lab	5	3	20	30	50	2
IV	17HEC404	Human Excellence Paper : Social Values & SKY Yoga Practice-4	1	2	25	25	50	1
	17UCS4N1/ 17UCS4N2	Non-Major Elective Paper-II Flash Lab/ Internet Services and Applications Lab	1	2	-	50	50	2
V		Extension Activities (NSS, NCC, Sports & Games)						
Total							600	23

Bloom's Taxonomy Based Assessment Pattern**K1-Remember; K2- Understanding; K3- Apply; K4-Analyze; K5- Evaluate****1. Part I,II & III--Theory: 75 Marks****(i) TEST- I & II and ESE:**

Knowledge Level	Section		Marks	Description	Total
K1	A(Answer all)	Q.1 to 5	10x1=10	MCQ	75
		Q.6 to 10		Define	
K2	B (Either or pattern)	Q.11 to 15	5x5=25	Short Answers	
K3 & K4	C (Answer 4 out of 6)	Q.16 is compulsory Q.17 to 21 (Answer 3 out of 5)	4x10=40	Descriptive/ Detailed	

2. Part IV--Theory: 50 Marks

Knowledge Level	Section		Marks	Description	Total
K1	A(Answer all)	Q.1 to 5	10x1=10	MCQ	50
		Q.6 to 10		Define	
K2, K3 & K4	B (Answer 5 out of 8)	Q.11 to 18	5 x 8=40	Descriptive/ Detailed	

3. Practical Examinations:

Knowledge Level	Section	Marks	Total
K3	Practical & Record work	30	50
K4		20	
K5			

Note:

- Question paper pattern for Non-Major Elective(NME) Practical Paper (Maximum Marks: 50 Marks)
 - Two questions from Computer Science Practical - 40 marks
 - Marks for Record - 10 marks

Components of Continuous Assessment

Components		Calculation	CIA Total
Test 1	75	$\frac{75+75+25}{7}$	25
Test 2	75		
Assignment/Seminar	25		

Programme Outcomes

PO1: To inculcate the strong fundamentals of mathematics and to develop competence in computer science.

PO2: To trigger the creativity and programming skills with enhanced knowledge and hands-on practical skill.

Programme Specific Outcomes

PSO1: To impart mathematical foundations of the algorithmic approach and computer science theory in the sculpting and design of computer based systems.

PSO2: Ability to apply the computer science knowledge in all domains and to inculcate strong problem solving skills through the courses of Computer Science.

PSO3: Ability to propose creativity and solutions, and to design modern, user-friendly applications that are greatly useful to the society.

PSO4: Ability to train the students in project based assignments as well as to analyze and interpret data.

PSO5: To impress upon students the importance of good ethical practices, right professional conduct and responsible team leadership, and to develop and update the skill required for IT industry.

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS101	Title:	Batch :	2017-2020
Hrs/Week:	04	Core I: Programming in 'C'	Semester:	I
			Credits:	04

Course Objective

The course objective is to know the basic components of the computer and working of each device, the student gain experience about structured programming, understand the implementation of C language and understand various features in C.

Course Outcomes (CO)

K1	CO1	To keep in mind the fundamentals of C programming
K2	CO2	To understand the loops and decision making statements to solve the problem
K3	CO3	To implement different operations on arrays and use functions to solve the given problem.
K4	CO4	To review the C program that uses pointers, structures and files

Syllabus

Units	Contents	Hrs
Unit I	Fundamentals of Computers : Introduction–History of Computers–Generations of Computers– <i>Classification of Computers</i> –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. Introduction to C – Constants – C character set – Delimiters – Keywords – Identifiers – Constants– Variables – Rules for defining variables- Data types, – Declaring and initializing variables – Type conversion– Operators – precedence of arithmetic – operators precedence & associativity – expressions – Mathematical functions - Input/Output statements.	10
Unit II	Control Statements: IF, IF..ELSE Statements, ELSE...IF ladder – Switch Statement – GOTO Statement – WHILE Statement – Do Statement – FOR Statement – Jumps in Loops –Flowchart Symbols Arrays: One dimensional Arrays – Two Dimensional Arrays – Multi Dimensional Arrays – Structures – Arrays within Structures – Structures within structures – Structures and Functions– Union – Size of structures. Characteristics of Arrays & String manipulation: Introduction - Declaring & Initializing variables – Reading string from terminal, writing string to screen – Arithmetic operations and characters– string handling Functions.	10
Unit III	Functions: User-defined functions- A-Multi-function programme- Elements of user defined function, definition of function-return value & their types, function calls & declarations-category of functions: No arguments & No return values-arguments that No return values – arguments with return values-No arguments that return a value-Nesting of functions-recursion & passing arrays & strings to functions. The scope, Visibility and lifetime of Variables in functions.	11
Unit IV	Pointers: Introduction-Accessing, Declaring & Initializing pointer variables-Chain of pointers-Pointer expression, increments-Pointer Arrays-Pointers and Character strings-Array of pointers-Pointers as function arguments-function returning pointers-pointers to functions-Pointers and Structures-Troubles with pointers.	10

Unit V	Files: Defining and opening a file – Closing a file –I/O operations of file – Error handling during I/O operations – Random access files – Command line argument-preprocessor – Macro Substitution – File Inclusion – Compiler control directives.	9
	Total Contact Hrs	50
	<i>*Italicized</i> texts are for self study	
	Power point Presentations, Seminar, and Assignment	
TEXT BOOKS	1.E.Balagurusamy, “Programming in Ansi C”, Tata McGraw-Hill Publishing Company Ltd., Sixth Edition, 2016. 2.E Balagurusamy, “Computing fundamentals & C programming” ,Tata McGraw-Hill, Second Reprint 2008.	
REFERENCES	1. Yaswanth Kanishkar, “LET US C”, BPB Publications, Seventh Edition, 2007. 2.Byron Gottfried,”Proramming with C”,Schaum’s Outlines series, Second Edition, 1996 3.Ashok N. Kamthane, “Programming with ANSI and Turbo C”,Seventh Impression,2009	

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	M	L	M
CO2	M	S	S	S	S
CO3	M	S	S	S	S
CO4	S	S	S	S	S

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr. M. Sakthi	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
M.Malathi	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS102	Title:	Batch :	2017-2020
		Core II: Digital Computer Fundamentals and Organization	Semester:	I
Hrs/Week:	4		Credits:	04

Course Objective

On completion of this course, the students can understand the design of combinational and sequential digital logic circuits. Students will also have knowledge on Programmable Logic devices and its usage.

Course Outcomes (CO)

K1	CO1	To recollect the fundamental concepts and techniques used in digital electronics.
K2	CO2	To get the idea of basic postulates of Boolean Algebra and to apply the methods of simplifying Boolean expressions
K3	CO3	To apply knowledge about internal circuitry and logic behind any digital system and to design various synchronous and asynchronous circuits.
K4	CO4	To analyze the concept of memories, and to introduce microcontroller case study.

Syllabus

Units	Contents	Hrs
Unit I	Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal –Binary addition, Multiplication, Division –Floating point representation, Complements, BCD, Excess3, 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.	10
Unit II	Combinational Logic Circuits: Boolean algebra –Karnaugh map –Canonical form 1 –Construction and properties –Implicants –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.	11
Unit III	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: <i>Strobe Control and Handshaking</i> –Priority Interrupt: Daisy -Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMAController, DMA Transfer. Input –Output Processor: CPU-IOP Communication.	10
Unit IV	Memory Organization: <i>Memory Hierarchy</i> –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	9
Unit V	CASE STUDY: Pin out diagram, Architecture, Organization and addressing modes of 80286-80386-80486-Introduction to microcontrollers.	10
	Total Contact Hrs	50

	<i>*Italicized</i> texts are for self study	
	Power point Presentations, Seminar, Assignment and Case study	
TEXT BOOKS	1. M.Morris Mano, “Computer System Architecture”, Prentice Hall of India, Third Edition,2007 2.Albert Paul Malvino, Donald P Leach ,“Digital Principles and Applications”, TMH,1996 3.Ramesh S Goankar, “Microprocessors and its Applications”, 2013	
REFERENCES	1.V .K Puri ,“ Digital Electronics”, Tata McGraw Hill, Reprint 2011. 2.A.P.Godse, D.A.Godse, “Digital Computer Fundamentals”, Technical Publications, First Edition 2007 3. M.Carter , “ Computer Architecture”, Schaum’s outline series,TMH,2002	

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	M	M
CO2	H	S	S	S	H
CO3	H	S	S	S	S
CO4	H	S	S	S	S

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
R. Deepa	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
K. Kannika Parameswari	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS1A1	Title :	Batch :	2017-2020
		Allied-1: Mathematics-I	Semester:	I
Hrs/Week:	4		Credits:	04

Course Objective

To make the students to understand and apply the central tendencies deviation, correlation, probability, Statistical Inference tests - To enable the students to solve linear algebra existences, numerical integration and differential equation using numerical methods.

Course Outcomes (CO)

K1	CO1	To recollect the definition of matrix and determinants and perform various operations on it
K2	CO2	To evaluate various Numerical Methods problems and find better result based on given information
K3	CO3	To understand different sampling test techniques such as t-test and F-variance ratio test for Large sample and Small sample
K4	CO4	To figure out appropriate statistical methods like Mean, Median, Mode and apply them in various data analysis problems

Syllabus

Units	Contents	Hrs
Unit I	Matrices –Introduction –Determination –Inverse of a matrix –Rank of a Matrix–Eigen value Problems.	10
Unit II	Statistics: Mean, Median, Mode, Range, Quartile Deviation, <i>Standard Deviation</i> , Rank Correlation, Co-efficient of Correlation, Regression.	10
Unit III	Large Sample test: Standard error- Test of Significance of Large Samples – Tests for (i) single proportion (ii) Difference of two proportions (iii) difference of two means (iv) difference of two standard deviations.Small sample test based on t, – t-test for (i) single mean (ii) Difference of two means (iii) Observed sample correlation co-efficient. F- Variance Ratio Test	10
Unit IV	Probability: <i>Permutation</i> , combination, trail, event, sample space, mutually exclusive cases, exhaustive events, Independent events, dependent events, simple and compound events. Measurement: Classical, relative frequency, theory of probability, Limitations, personalistic view of probability and Axiomatic Approach of probability, addition and multiplication theorem, odds, miscellaneous illustrations question	11
Unit V	Numerical Methods: Gauss-Seidal method for linear algebric system-Newton’s Rapshon method for polynomial system-Newton forward and backward interpolation-Trapezoidal rule-Simpson 1/3 rule and 3/8 rule for Numerical Integration.	9
Total Contact Hrs		50
	<i>*Italicized</i> texts are for self study	
	Power point Presentations, Seminar, and Assignment	

TEXT BOOKS	1. Dr. M.K.Venkataraman , “Engineering Mathematics”, National Publishing Company, Chennai. 2.RSN Pillai & Bagavathi , “Statistics Theory and Practice”, S.Chand& Company Ltd. July 2011 3. P.Kandasamy, K.Thilagavathy, K.Gunavathy, “Numerical Methods”, Sultan Chand & Co. Ltd., Third Edition,2002.
REFERENCES	1. S.P. Gupta, “Statistical Methods”, Sultan Chand & Sons Publishers, Thirty-third Edition, 2002. 2. M.Venkatraman, “Numerical Methods in Science and Engineering”, The National Publications, Fifth Edition,1999. 3. “Computer Oriented Statistics and Numerical Methods”, S.Chand and Co Delhi. 2009

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	S	M	H	S
CO2	H	M	H	S	H
CO3	M	S	S	M	M
CO4	M	H	H	L	H

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
K. Srinivasan	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
R. Revathi	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS103	Title :	Batch :	2017-2020
Hrs/Week:	4	Core Lab I: Programming Lab In 'C'	Semester:	I
			Credits:	02

Course Objective

The purpose of this course is to introduce students to the field of programming using C language. The students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C.

Course Outcomes (CO)

K3	CO1	To implement different operations on arrays and use functions to solve the given problems.
K4	CO2	To evaluate the C program that uses pointers, structures and files
K5	CO3	To validate programs with pointers and arrays, perform pointer arithmetic, and use the pre processor

Syllabus

Units	Contents	Hrs
	SET A • Program to find the greatest number among n numbers. • Program to Generate a Fibonacci series. • Program to check whether the given number is Armstrong number or not. • Program to find Prime numbers between a given range. • Program for finding Sum of individual digits. • Program to display the Numbers in Ascending order. • Program to display the Numbers in Descending order. • Program to display the Names in Alphabetic order. • Program to find whether a given string is a palindrome or not • Program to calculate the Matrix addition. • Program to calculate the Matrix multiplication. • Program to illustrate the concept of structures. SET B • Program to find the values of the following Series Sin(X), Cos(X), E^x, Log(1+X). • Program to perform the Sequential search. • Program for Binary search. • Program to generate the Piglatin. • Program to find a Mean, median & mode for given values. • Program to find Standard deviation & variance for given values.	

	• Program to find the Transpose of a Matrix. • Program to count vowels, consonants, white spaces in a given sentence. • Program to illustrate the concept of Pointers. • Program to illustrate the concept of subroutine functions. • Program to create a file. • Program for processing a file. • Program using command line arguments													
	INTERNAL MARK (20 Marks) <table><tr><td>Observation Record Note</td><td>5 Marks</td></tr><tr><td>Practical Skills</td><td>5 Marks</td></tr><tr><td>Model Exam</td><td>10 marks</td></tr></table>	Observation Record Note	5 Marks	Practical Skills	5 Marks	Model Exam	10 marks	EXTERNAL MARK (30 Marks) <table><tr><td>Record Note</td><td>5 Marks</td></tr><tr><td>Set A</td><td>10 Marks</td></tr><tr><td>Set B</td><td>15 marks</td></tr></table>	Record Note	5 Marks	Set A	10 Marks	Set B	15 marks
Observation Record Note	5 Marks													
Practical Skills	5 Marks													
Model Exam	10 marks													
Record Note	5 Marks													
Set A	10 Marks													
Set B	15 marks													

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	M
CO2	H	H	S	S	S
CO3	H	S	H	S	S

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr. M. Sakthi	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Duraiaraju	Name: Dr.R.Muthukumaran
M.Malathi	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS204	Title :	Batch :	2017-2020
		Core III: Object Oriented Programming Using C++	Semester:	II
Hrs/Week:	4		Credits:	04

Course Objective

On successful completion of the course the students should understand all the features of C++ and make the students to apply the same for writing programming for solving problem.

Course Outcomes (CO)

K1	CO1	To remember the basic OOPs concepts such as Class, Inheritance, Abstraction, Polymorphism etc.
K2	CO2	To understand how C++ differentiates between object oriented programming and procedural programming and the use of function, operator overloading.
K3	CO3	To implement programs using more advanced features such as composition of Objects, Operator overloads, Inheritance, Polymorphism, Dynamic memory allocation etc.
K4	CO4	To evaluate C++ programs using File I/O, Command line Arguments and Exception Handling.

Syllabus

Units	Contents	Hrs
Unit I	Introduction: Evolutions of C++- Object oriented Technology- Programming Paradigms- Disadvantages of Conventional Programs- Key concepts of object oriented programming- Advantages of OOPs- Applications of oops -Input and Output in C++:Streams in C++- Predefined Streams – Stream Classes- Formatted and Unformatted data - Formatted Console I/O Operations – Unformatted Console I/O operations- Bit Fields – Manipulators.	8
Unit II	C++ Declarations: Parts of C++ programs – <i>Types of Tokens, Keywords, Identifiers</i> . Data Types: Basic, Derived, User defined, Void – Operators in C++ - Constants- Memory Management Operators- Precedence of Operators in C++. Control Structures: Decision making statements: if- else, nested if – else, goto, break, continue, Switch Case- For loop- While Loop- do while loop. Functions in C++: Parts of a function- passing arguments- Inline Function- Function overloading.	9
Unit III	Classes and Objects: Classes in C++ - Declaring Objects: Public, Private, Protected-Defining Member functions – Characteristics of Member Functions – Rules for Inline Functions- Array of Objects- Friend functions- Constant Member function- Data Hiding- overloading member function. Arrays: <i>Characteristics of arrays- Initialization of Array using functions</i> - Array of Classes . Constructors and Destructors: Characteristics of Constructors and Destructors-Application with constructors- Overloading and Copy Constructors.	10
Unit IV	Operator Overloading and Type Conversion: Keyword Operator – Overloading Unary Operators- Operator Return Type- Constraint on Increment and Decrement Operators- Overloading with friend functions- Type Conversion- Rules for Overloading Operators. Inheritance: Introduction –types of Inheritance: Single, Multi-level, Multiple, Hierarchical, Multi-Path Advantages and its Disadvantages. Polymorphism: Introduction- Pointer to derived Class Objects- Virtual Functions- Rules- Pure Virtual functions.	11

Unit V	Files: File Stream Classes- Steps of File Operation – Finding End of File- File Opening Modes- Manipulators with Arguments – Sequential Read and Write Operations – Binary and ASCII Files- Command Line Arguments. Exception Handling- Principles of Exception Handling- Try, Throw, Catch- Exception Handling Mechanism- Commonly used header Files. Templates: Class Templates-Function Templates	12
	Total Contact Hrs	50
	<i>*Italicized texts are for self study</i> Power point Presentations, Seminar, and Assignment	
TEXT BOOKS	1. E. Balagurusamy, “Object Oriented Programming with C++”, Tata McGraw Hill publication, Fifth edition, 2012. 2. Ashok N. Kamthane, “Object Oriented Programming with ANSI and Turbo C++”, Pearson Education 5th Impression 2008.	
REFERENCES	1. D.Ravichandran.J, “Programming with C++”, Tata McGraw Hill publication, fourteenth edition, 2001. 2. RabortLafore, “Object Oriented Programming with C++”, Galgotia Publication Pvt. Ltd, second edition, 2001. 3. Ashok Kamathane- “Programming in C++” Prentice Hall 2003	

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	H	H
CO2	H	M	M	S	S
CO3	M	M	S	H	S
CO4	H	S	H	S	H

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr.Antony Selvadoss Thanamani	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
S.S.Shanthi	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS205	Title:	Batch :	2017-2020
		Core IV: Data and File Structure	Semester:	II
Hrs/Week:	4		Credits:	04

Course Objective

On successful completion of the course the students are able to understand the concepts of array, stack, queue, list, linked list, tree, graph theory, searching and sorting.

Course Outcomes (CO)

K1	CO1	To keep in mind the basic static and dynamic data structures and relevant standard algorithms for them.
K2	CO2	To get the idea about advantages and disadvantages of specific algorithms and data structures.
K3	CO3	To implement new solutions for programming problems or improve existing code using learned algorithms and data structures.
K4	CO4	To evaluate algorithms and data structures in terms of time and memory complexity of basic operations.

Syllabus

Units	Contents	Hrs
Unit I	Introduction – Creation of Programs – Analysis of programs – Arrays – representation of Arrays – Ordered Lists – Polynomials – Stacks and Queues – fundamentals – Evaluation of Expressions – Multiple stacks and queues.	9
Unit II	Linked List – Singly Linked lists – Linked Stacks and Queues – Polynomial addition using stack – Functions of Linked list – <i>Doubly Linked List</i> – Dynamic Storage Management – Garbage collection and Compaction.	10
Unit III	Trees – Basics – Binary Trees – Binary Trees Representation – Binary Trees Traversal – Binary tree representation of Trees .Symbol Tables –Hash table.	11
Unit IV	Searching and Sorting – Linear search, Binary search & Fibonacci search – Sorting – Insertion, Quick, Merge (2-way), Heap, and Radix.	11
Unit V	Files: Files, Queries and Sequential Organizations: <i>Storage device types</i> -Query types, Mode of Retrieval, Mode of update– Indexing techniques: Cylinder-Surface Indexing-Hashed Indexes – File Organizations :Sequential Organizations-Random Organizations-Linked Organization-Storage Management.	9
	Total Contact Hrs	50
	<i>*Italicized texts are for self study</i>	
	Power point Presentations, Seminar, and Assignment	
TEXT BOOKS	1. Ellis Horowitz & Sartaz Sahani, “Fundamentals of Data Structures” Galgotia Book Source, 1999. 2. ISRD GROUP, “Data Structures using C” , Tata McGraw Hill ,Seventh Reprint,2010	

REFERENCES	1. Jean Paul Tremblay and Paul G. Sorenson, “An Introduction to Data Structures with Applications” Tata McGraw Hill Publication, Second Edition, 2008. 2. Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed, “Fundamentals of Data Structures in C”, Universities Press (India) Private Limited, 2008. 3. R.Krishnamurthy and G. IndiraniKumaravel, “Data Structures using C”, Tata McGraw – Hill Publishing Company Limited, New Delhi, 2008.
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Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	H	M
CO2	H	M	H	S	H
CO3	M	H	S	H	S
CO4	M	S	M	S	H

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
R. Deepa	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
N. Arul Kumar	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS2A2	Title :	Batch :	2017-2020
		Allied-2: Mathematics-II (Discrete Mathematics)	Semester:	II
Hrs/Week:	4		Credits:	04

Course Objective

On successful completion of the course the students are able to understand the concepts and principles of relations, functions, fuzzy sets, partial ordering, algebraic structures, mathematical logic, and formal languages and graph theory.

Course Outcomes (CO)

K1	CO1	To keep in mind about the fundamental ideas and notation of discrete mathematics with examples
K2	CO2	To get the idea of relations and its types and fuzzy sets and its operations
K3	CO3	To analyze the formal language such as formation of words with examples ,groups and monoids
K4	CO4	To Understand some basic properties of graphs and types of graphs, and be able to relate these to practical examples

Syllabus

Units	Contents	Hrs
Unit I	Mathematical logic: Connectives – Tautology and contradiction-Equivalence of Propositions-Duality law- Normal forms – Disjunctive and conjunctive normal Forms-PDNF-PCNF– Worked examples-Predicate calculus – Quantifiers – Free and bound variables(Definitions only).	10
Unit II	Relations: Types of relations-some operation of relation- Composition of Relations – Properties of relation-Equivalence Classes-matrix representation of a relation-Worked Examples. Fuzzy Sets: Fuzzy sets – Crisp Sets –Overview of operations on fuzzy sets – Fuzzy complement – Fuzzy union – Fuzzy intersection – Aggregation operations.	9
Unit III	Functions: Representation of function- <i>Types of function</i> - Composition of functions – Inverse of functions-Worked Examples. Partial ordering: Hasse diagrams for partial ordering-terminology related to posets-Lattice-Properties of Lattices Worked Examples.	10
Unit IV	Algebraic Structure: Semigroups & monoids- Homomorphism of semigroups and monoids- sub semigroups and submonoids-groups Formal languages: Basic definitions-phase structure grammar- types of phase structure grammar-Worked examples	10
Unit V	Graph Theory: Graph –Degree of the vertex – some special simple graphs- <i>Matrix representation of graphs</i> -Paths, Cycles and connectivity- Eulerian Graphs - Hamiltonian graphs- Connectedness in directed graphs- Shortest path algorithm-Dijkstra’s Algorithm-Worked Examples.	11
	Total Contact Hrs	50
	<i>*Italicized texts are for self study</i>	
	Power point Presentations, Seminar, and Assignment	

TEXT BOOKS	1. T.Veerarajan, “Discrete mathematics”, Tata McGraw Hill, 2007. 2. George Klir & Tina A Folger, “Fuzzy Sets, Uncertainty & Information”, Prentice hall of India, Eighth Edition, 2003. 3. Narasingh Deo, “Graph theory with applications to Engineering and computer science”, Prentice hall, 2008
REFERENCES	1. V. Sundaresan, K.S. Ganapathi Subramanian, K. Ganesan, “Discrete Mathematics”, A.P.Publications, Sirkali, 2006. 2. Rani Sironmani, “Formal Languages”, The Christian Literature Society, First Edition, 1984. 3. J.P. Tremplay & R. Manohar “Discrete Mathematical structures with Applications to computer Science”, McGraw Hill Publication 1975. Narasing Deo, “Graph Theory”, Prentice hall of India, New Delhi, 2008.

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	S	M	H	S
CO2	H	M	H	S	H
CO3	M	S	S	M	M
CO4	M	H	H	L	H

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
M. Malathi	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
S. Vallinayagam	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS206	Title :	Batch :	2017-2020
		Core Lab II : Programming Lab in C++	Semester:	II
Hrs/Week:	4		Credits:	02

Course Objective

The prime purpose of C++ programming was to add object orientation to the C programming language and also to enhance problem solving and programming skills using OOPs concepts in various domains.

Course Outcomes (CO)

K3	CO1	To apply the basic concepts of C++ such as function, friend functions and array of objects to solve a particular problem.
K4	CO2	To analyze programs using more advanced OOPs concepts such as Constructor/Destructor, Operator overloading, Inheritance, and Polymorphism.
K5	CO3	To validate programs using Dynamic memory allocation and Virtual functions.

Syllabus

Units	Contents	Hrs
	SET A • Program to print Floyd's triangle. • Program to illustrate the concept of class and object. • Program to illustrate the concept of function without return statement. • Program to illustrate the concept of function with return statement. • Program to illustrate the concept of Inline function. • Program to illustrate the concept of Default argument. • Program to illustrate the concept of Friend function. • Program to illustrate the concept of function overloading. • Program to illustrate the concept Array of Object. • Program to illustrate the concept of objects as Function argument. • Program to illustrate the concept of returning by objects. • Program to illustrate the concept of constructors. • Program to illustrate formatting with manipulators. SET B • Program to illustrate the concept of destructors. • Program to illustrate the concept copy constructor. • Program to illustrate the concept overloading unary operators. • Program to illustrate the concept overloading binary operators.	

	• Program to illustrate the concept of single inheritance. • Program to illustrate the concept of multiple inheritances. • Program to illustrate the concept pointers to objects • Program to illustrate the concept pointers to derived objects. • Program to illustrate the concept virtual function. • Program to illustrate formatted console I/O operations. • Program to illustrate working with single file. • Program to illustrate working with multiple files													
	INTERNAL MARK (20 Marks) <table><tr><td>Observation Record Note</td><td>5 Marks</td></tr><tr><td>Practical Skills</td><td>5 Marks</td></tr><tr><td>Model Exam</td><td>10 marks</td></tr></table> EXTERNAL MARK (30 Marks) <table><tr><td>Record Note</td><td>5 Marks</td></tr><tr><td>Set A</td><td>10 Marks</td></tr><tr><td>Set B</td><td>15 marks</td></tr></table>	Observation Record Note	5 Marks	Practical Skills	5 Marks	Model Exam	10 marks	Record Note	5 Marks	Set A	10 Marks	Set B	15 marks	
Observation Record Note	5 Marks													
Practical Skills	5 Marks													
Model Exam	10 marks													
Record Note	5 Marks													
Set A	10 Marks													
Set B	15 marks													

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	H	H
CO2	H	M	M	S	S
CO3	M	M	H	H	M

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr.Antony Selvadoss Thanamani	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
S.S.Shanthi	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS307	Title :	Batch :	2017-2020
Hrs/Week:	4	Core V: Java Programming	Semester:	III
			Credits:	04

Course Objective

The objective of this course is to make the students to understand the various features of Java such as Packages, Applets, AWT controls, Stream classes and Files and make the students to apply the same for writing the programs.

Course Outcomes (CO)

K1	CO1	To remember the OOPs concepts such as class, methods, inheritance, encapsulation and polymorphism etc.
K2	CO2	To understand the differences between application programs and applets, applet lifecycle and graphics programming.
K3	CO3	To implement programs using Thread, Applet and AWT controls like Text Fields, Buttons, Checkboxes, Radio Buttons and Layouts etc.,
K4	CO4	To evaluate java programs using stream classes and files.

Syllabus

Units	Contents	Hrs
Unit I	Java Evolution-Overview of Java Language-Constants, Variables & Datatypes-Operators & Expressions- <i>Decision making & branching</i> -Decision making & looping.	9
Unit II	Classes, Objects & methods- Arrays, Strings & Vectors-Interfaces: Multiple Inheritance-Packages: Putting classes together - Multithreaded Programming.	9
Unit III	Managing Errors & Exceptions- Applet Programming: Introduction-How Applets differ from application-Writing Applets-Building applet code- lifecycle-Executable Applet- <i>Designing Web page</i> -Applet tag-Adding & Running Applet using HTML File-Passing Parameters to Applets-Event Handling-Graphics Programming.	11
Unit IV	AWT: Labels, Buttons, Checkboxes, Radio Buttons(CheckBoxGroups), Choice and List Controls. AWT –Managing Scrollbars-TextFields-Text Areas. AWT: Layout Managers: FlowLayout- BorderLayout.	10
Unit V	Managing Input/Output in files in Java: Introduction-Concept of Streams-Stream Classes-Byte Stream classes-Character Stream Classes-Using Streams-Using I/O Classes, File Class-I/O Exceptions-Creation of Files-Reading/Writing Characters & Bytes-Handling primitive data types-Random Access Files-Interactive I/O-Other Stream Classes.	11
	Total Contact Hrs	50
	<i>*Italicized texts are for self study</i>	
	Power point Presentations, Seminar, Quiz and Assignment	

TEXT BOOKS	1.E.Balagurusamy,"Programming with Java – A Primer", Tata McGraw Hill Publishing Company Limited, New Delhi, 5th Edition, 2014. 2. Herbert Schildt,"The Complete Reference-Java2", Tenth Edition, TataMcGraw Hill Publishing Company Limited, New Delhi, 2017.
REFERENCES	1. Kogent Solutions Inc., "JAVA 6 Programming Black Book", Dream TechPress , New Delhi, 2009 2. K.Somasundram, "Programming in Java2", Jaico Publishing House, Chennai, 2005. 3. ISRD Group," Introduction to Object Oriented Programming through Java", Tata McGraw Hill Publishing Company, New Delhi, 2007.

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	M	S	H
CO2	M	M	S	S	S
CO3	S	H	S	H	S
CO4	H	M	H	S	S

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr.R.Manickachezian	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
N.Arul kumar	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS308	Title :	Batch :	2017-2020
		Core VI: Relational Database Management System and Oracle	Semester:	III
Hrs/Week:	5		Credits:	04

Course Objective

The objective of this course is to make the students to understand and apply the principles of data modeling using Entity Relationship and normalization techniques and understand the use of Structured Query Language (SQL) and its syntax.

Course Outcomes (CO)

K1	CO1	To remember the basic concepts and applications of database systems and SQL.
K2	CO2	To understand the relational database theory, and be able to write relational algebra expressions for queries
K3	CO3	To apply design principles using the E-R method and normalization approach
K4	CO4	To interpret SQL interface of a relational DBMS package to create, secure, populate, maintain, and query a database and PL/SQL programming using Triggers and Cursors.

Syllabus

Units	Contents	Hrs
Unit I	Database Concepts: A Relational Approach: An Introduction- Relationships- Database Management System- The Relational Database Model – Integrity Rules – Theoretical Relational Languages – Relational Algebra, Applications of Relational Algebra, Relational Calculus. Database Design: Data Modeling – Dependency – Database Design – Entity – Relationship Model – DFD Diagrams – Codd's Rules for RDBMS.	10
Unit II	Normalization: Normal Forms (1NF, 2NF, 3NF, BCNF, 4NF) – Dependency Diagrams – <i>Denormalization</i> . Oracle9i: An Introduction – The SQL*Plus Environment – Structured Query Language – (SQL) – Logging into SQL*plus – SQL*plus Commands – Errors and Help – Alternate Text Editors – SQL*Plus Worksheet – iSQL*Plus	9
Unit III	Working with Table: Data Management and Retrieval: DML – Adding a new Row /Record – Customized Prompts – Updating and Deleting an existing Rows/Records – Retrieving data from table – Arithmetic Operations – Restricting data with WHERE Clause – Sorting – Revisiting substitution variables – DEFINE Command – CASE structure. Functions and Grouping: Built-in functions- Grouping Data	10
Unit IV	Multiple Tables: Joins and Set Operations: Join – Set Operations. PL/SQL: Introduction – Block Structure – Comments – <i>Data types</i> – Other data types – Declaration – Assignment Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control Statements.	10

Unit V	PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR Loops – SELECT...FOR UPDATE – WHERE CRRENT OF Clause – Cursor with parameters – Cursor Variables – Exceptions – Types of Exceptions. PL/SQL: Composite Data Types: Records – Tables – VArrays - Triggers – Data Dictionary Views.	11
	Total Contact Hrs	50
	<i>*Italicized</i> texts are for self study	
	Power point Presentations, Seminar, Quiz and Assignment	
TEXT BOOKS	1. Nilesh Shah, 2005, “Database System Usind Oracle-A Simplified Guide to SQL and PL/SQL”, 2 nd Edition, Pearson Education.	
REFERENCES	1. Ivan Bayross, 2010, “SQL, PL/SQL-The programming language of Oracle”, BPB Publication, 3 rd edition 2. Ivan Bayross, 2000, “Commercial Application Development Using Oracle”, BPB Publication. 3. George Koch, 2000, “The Complete Reference - Oracle 8i “, Tata McGraw Hill publication.	

Mapping

PSQ CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	H	M
CO2	M	M	S	M	S
CO3	M	M	M	H	S
CO4	S	S	M	S	M

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr.R.Manickachezian	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
M.Dhavapriya	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS309	Title :	Batch :	2017-2020
		Core VII: Operating System	Semester:	III
Hrs/Week:	4		Credits:	04

Course Objective

To objective of the course is to enable the students to understand the concepts of operating system including process management, storage management, scheduling and windows.

Course Outcomes (CO)

K1	CO1	To remember the basic concepts Operating System
K2	CO2	To understand the concepts of Storage Allocation, Process Management, and Scheduling Algorithms
K3	CO3	To apply the Process Management principles and functionalities in Database Systems
K4	CO4	To review the case studies in Windows

Syllabus

Units	Contents	Hrs
Unit I	Introduction: Definition of operating system – History of operating system. Hardware: Interrupts and polling – Buffering – Storage protection – online and offline operation – Cycle stealing – Problem state – Virtual storage – Multi processing – Storage Hierarchy – RISC. Software: Machine Language programming – Spooling – <i>Optimizing Compiler</i> – Object oriented programming – Emulation. Process Management: Definition – process states – The Process Control Block – Operations on process – Interrupt Processing – Nucleus of OS.	10
Unit II	Storage Mangement: Real Storage: Storage organization – Management – Hierarchy – Storage management Strategies – Contiguous Vs Non-contiguous storage allocation – Fixed partition multiple programming – Variable partition multiple programming - Multiprogramming with storage swapping – Virtual storage organization – Concepts – Paging – Segmentation – Paging /segmentation systems.	10
Unit III	Job and Processor Scheduling: Introduction –Scheduling levels – Scheduling objectives – Scheduling criteria – Preemptive Vs Non-preemptive scheduling – Priorities – FIFO – Round Robin –Quantum size – Shortest job – Shortest remaining time – Highest response ratio next. Deadlock: Definition – Examples – Deadlock prevention, avoidance, detection and recovery – Banker's Algorithm only.	10
Unit IV	Auxillary Storage Management: Disk performance optimization: Why Disk scheduling is necessary – Desirable characteristics of disk scheduling polices – Seek optimization – Disk Caching – RAM Disks.File and Database Systems :Introduction – File system- File system function – Blocking and buffering – File Organization – Allocating and freeing space – File Descriptor – Access Control matrix – access control by user classes – Backup and recovery	10

Unit V	Case study Windows: Introduction - <i>History– design goals</i> - system architecture. Process & thread management: Process & thread organization-scheduling-synchronization. Memory management: memory organization-allocation-page replacement. File system management: file system drivers-NTFS. Input output management: device drivers- I/O processing-interrupt handling-file cache management.	10
	Total Contact Hrs	50
	<i>*Italicized texts are for self study</i>	
	Power point Presentations, Seminar, Quiz and Assignment	
TEXT BOOKS	1. Deital, Deital, Choffnes “Operating systems”, Pearson education and dorling kindersly publishing,Inc., Third edition,2009.	
REFERENCES	1.Andrew S. Tanenbaum, Albert S. Woodhull, “Operating Systems Design and Implementation”. Prentice Hall, Third Edition.2006	

Mapping

PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	S	M
CO2	M	S	H	M	S
CO3	S	M	M	H	H
CO4	M	M	M	S	M

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
M.Malathi R.Deepa	Name: Dr.Antony Selvadoss Thanamani Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS3A3	Title :	Batch :	2017-2020
		Allied-3: Computer Based Optimization Techniques	Semester:	III
Hrs/Week:	5		Credits:	04

Course Objective

To enable the students to understand and to apply the resource management techniques available in OR including linear programming transportation assignment problem, inventory control, queuing theory and network problems.

Course Outcomes (CO)

K1	CO1	To remember the Linear Programming Problem concepts such as Mathematical formulations, Graphical Method, Two-phase problem, etc.
K2	CO2	To understand the differences between Transportation and Assignment Problems
K3	CO3	To implement concept of Sequencing, Replacement, Inventory and Queuing System
K4	CO4	To evaluate CPM,PERT methods

Syllabus

Units	Contents	Hrs
Unit I	Origin and development of OR – <i>Applications of OR</i> – Linear programming – Mathematical formulation of the problem – Graphical Method – Simplex Method – Two Phase Simplex Method (Big-M Method not included)–Primal and Dual problem- (Duality Method not included) - Dual Simplex Method	9
Unit II	Transportation Problem: Balanced Transportation problem and Un-Balanced Transportation problem-Row Minimum-Column Minimum-North-West Corner-Matrix Minima Method-Vogel's Approximation Methods-MODI Method(u-v Method for OBFS). Assignment Problem: Balanced and Un-Balanced Assignment problem– Hungarian method – Routing problem.	10
Unit III	Sequencing problem: Problems with n jobs and 2 machines – Problems with 'n' jobs and 'k' machines. Inventory control – Types of inventory Economic Order Quantity: Model 1: EOQ problem with no shortages Model 2: EOQ problem with no shortages and several production runs of unequal length Model 3: EOQ problem with shortages. EOQ Problem with Price Breaks: Model 1: EOQ Problem with one price breaks.	10
Unit IV	Queueing Theory: Queueing System – Characteristics of Queueing system – Symbols and Notations- Queueing models Model 1: (M/M/1) : (∞ / FIFO) Model 2: (M/M/1) : (N/ FIFO) Model 3: (M/M/C) : (∞ / FIFO) Replacement Problem and System Reliability: Model 1: Value of Money does not change with time. Model 2: Value of Money change with time.	11

Unit V	Network Scheduling: Network and Basic components – <i>Logical sequencing:</i> Formation of a loop,Dangling,Redundancy-Network Construction- Rules of Network construction –Time calculation in Network-Numbering the events– Critical Path Method (CPM)– PERT: PERT Calculations (Normal table is not included).	10
	Total Contact Hrs	50
	<i>*Italicized texts are for self study</i>	
	Power point Presentations, Seminar and Assignment	
TEXT BOOKS	1.KantiSwarup, PK Gupta, Man Mohan, “Operations Research “, Sulthan Chand & Sons, Seventeenth edition, 2013.	
REFERENCES	1. S. DharaniVenkatakrishnan,”Operations Research”. KeerthiPublishing(p) ltd. 2002. 2. PK Gupta , Man Mohan, “Problems in Operations Research”. 3rd Edition,2001. 3. J K Sharma,” Operations Research: Problems and Solutions”, 3 rd Edition 2013 4. G. Srinivasan “Operations Research: principles and Applications”, 2 nd Edition, 2012. Hamdy A.Taha,”Operations Research an Introduction”, Eight edition, Dorling Kindersley (India) Pvt.Ltd Publications,2007.	

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	H	H
CO2	H	M	M	S	S
CO3	M	M	S	H	M
CO4	H	M	H	S	H

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr.R.Manickachezian	Name:Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
R.Nandhakumar	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS310	Title :	Batch :	2017-2020
		Core Lab III: Programming Lab in Java	Semester:	III
Hrs/Week:	5		Credits:	02

Course Objective

The objective of this course is to make the students to implement various features of java programming by using Java SDK environment to create, debug and run java programs.

Course Outcomes (CO)

K3	CO1	To apply the basic concepts of Java such as class, methods, constructors, arrays and interfaces to solve the problems.
K4	CO2	To analyze programs using method overloading, method overriding, packages and threads.
K5	CO3	To validate programs using event handling, applets, AWT controls and files.

Syllabus

Units	Contents	Hrs
	SET A • Program to sort the given names in alphabetical order. • Program for command line arguments. • Program to display the mark list of the students by using single inheritance. • Program to display the employee payslip using multiple inheritance. • Program for extending the Thread class. • Program to creating Thread by implementing Runnable Interface. • Program for method overloading. • Program for method overriding. • Program for exception handling. • Program to add the two numbers using applet. SET B • Program for Bank processing using Interface. • Program for salary details using packages. • Program for multithreading. • Program to create a Thread using a synchronized block within the run () method. • Program to display the different shapes using applet. • Program to display the image using applet. • Program using AWT Components (TextField, Button, Checkbox, CheckboxGroup, Choice and List) • Program to copy one file to another file.	

	• Program to perform Key Events. • Program to perform Mouse Events. • Program for the processing of random access file.																
	INTERNAL MARK (20 Marks) <table><tr><td>Observation Note</td><td>Record</td><td>5 Marks</td></tr><tr><td colspan="2">Practical Skills</td><td>5 Marks</td></tr><tr><td colspan="2">Model Exam</td><td>10 Marks</td></tr></table>	Observation Note	Record	5 Marks	Practical Skills		5 Marks	Model Exam		10 Marks	EXTERNAL MARK (30 Marks) <table><tr><td>Record Note</td><td>5 Marks</td></tr><tr><td>Set A</td><td>10 Marks</td></tr><tr><td>Set B</td><td>15 Marks</td></tr></table>	Record Note	5 Marks	Set A	10 Marks	Set B	15 Marks
Observation Note	Record	5 Marks															
Practical Skills		5 Marks															
Model Exam		10 Marks															
Record Note	5 Marks																
Set A	10 Marks																
Set B	15 Marks																

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	H	M	S
CO2	S	S	M	S	M
CO3	M	M	S	H	M

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr.R.Manickachezian	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
N.Arul kumar	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS311	Title :	Batch :	2017-2020
		Core Lab IV: Programming Lab in RDBMS	Semester:	III
Hrs/Week:	5		Credits:	02

Course Objective

The objective of this lab is to provide a strong formal foundation in database concepts, technology and practice to the participants to groom them into well-informed database application developers.

Course Outcomes (CO)

K3	CO1	To apply the normalization techniques for development of application software to realistic problems and ability to formulate queries using SQL DML/DDL/DCL commands
K4	CO2	To interpret SQL interface of a relational DBMS package to create, secure, populate, maintain, and query a database and PL/SQL programming using Triggers and Cursors.
K5	CO3	To access data stored in an Oracle Relational DBMS using Oracle SQL, PL/SQL

Syllabus

Units	Contents	Hrs															
	SET A - Write the SQL Commands for DDL - Write the SQL Commands for DML - Write the SQL Commands for TCL - Write the SQL Commands to perform SQL Operations - Write the SQL Commands for Views - Write the SQL Commands for Joins - Write the SQL Commands to perform Set Operations - Write the SQL Commands for Sub Queries - Write a Pl/Sql program to Reverse a given number - Write a Pl/Sql program to find given number is Odd Or Even - Write a Pl/Sql program to display Fibonacci Series - Write a Pl/Sql program to find given number is Prime Or Not SET B - Apply Normalizations (1st, 2nd & 3rd) to the following table: Table Name: Users <table><tr><th>Name</th><th>Company</th><th>Company_Address</th><th>Url1</th><th>Url2</th></tr><tr><td>Joe</td><td>ABC</td><td>Work Lane</td><td>abc.com</td><td>xyz.com</td></tr><tr><td>Jill</td><td>XYZ</td><td>1 Job Street</td><td>abc.com</td><td>xyz.com</td></tr></table> - Salary Calculation Using Cursor - Write a Pl/Sql program to generate all prime numbers below 100 - Write a program to demonstrate %type and %rowtype attributes - Create a trigger before/after update on employee table for each row/statement - Create a trigger before/after delete on employee table for each row/statement - Create a trigger before/after insert on employee table for each row/statement	Name	Company	Company_Address	Url1	Url2	Joe	ABC	Work Lane	abc.com	xyz.com	Jill	XYZ	1 Job Street	abc.com	xyz.com	
Name	Company	Company_Address	Url1	Url2													
Joe	ABC	Work Lane	abc.com	xyz.com													
Jill	XYZ	1 Job Street	abc.com	xyz.com													

- Create a cursor, which displays all employee numbers and names from the EMP table
- Create a cursor, which update the salaries of all employees as per the given data
- Create a cursor, which displays names of employees having salary > 50000
- Cursor For Loop
- **Database Schema for a Employee-pay scenario**

Tables: Employee , department, pay details, payroll

For the above schema, perform the following—

- Create the tables with the appropriate integrity constraints
- Insert around 10 records in each of the tables
- List the employee details department wise
- List all the employee names who joined after particular date
- List the details of employees whose basic salary is between 10,000 and 20,000
- Give a count of how many employees are working in each department
- Give a names of the employees whose netsalary>10,000
- List the details for an employee_id=5
- Create a view which lists out the emp_name, department, basic, deductions, netsalary
- Create a view which lists the emp_name and his netsalary

INTERNAL MARK (20 Marks)

Observation Note	Record	5 Marks
Practical Skills		5 Marks
Model Exam		10 Marks

EXTERNAL MARK (30 Marks)

Record Note	5 Marks
Set A	10 Marks
Set B	15 Marks

Mapping

PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	H	H
CO2	S	H	M	M	M
CO3	S	H	M	H	M

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr.R.Manickachezian	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
M.Dhavapriya	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS3N1	Title :	Batch :	2017-2020
		Non-Major Elective Paper-I: Photoshop Lab	Semester:	III
Hrs/Week:	1		Credits:	02

Course Objective

The objective of this course is to make the students to gain a working knowledge of Photoshop and develop their skills in editing and altering photographs for through a basic understanding of the tool bar, layers, and the adjustments panel.

Course Outcomes (CO)

K3	CO1	To apply the different type of tools available in Photoshop to create simple applications.
K4	CO2	To interpret programs using various filters in Photoshop.
K5	CO3	To access the new tools for designing multi-layered applications.

Syllabus

Units	Contents	Hrs						
	SET A • Image Menu using Photoshop • Reduce Picture Size using Photoshop • Replace color in an image using Photoshop • Make a simple book cover by using basic functionalities using Photoshop • Transfer an object from one image to another and erase background using Photoshop • Add a pattern as background using Photoshop SET B • Create India Map using Photoshop • Retouching photos using Photoshop • Take a logo and modify it using Photoshop • Alter an image using filters using Photoshop • Special Effects-Color in black and white image using Photoshop • Special Effects-Feathered Portraits (Soft fade) using Photoshop EXTERNAL MARK (50 Marks) <table><tr><td>Record Note</td><td>10 Marks</td></tr><tr><td>Set A</td><td>20 Marks</td></tr><tr><td>Set B</td><td>20 Marks</td></tr></table>	Record Note	10 Marks	Set A	20 Marks	Set B	20 Marks	
Record Note	10 Marks							
Set A	20 Marks							
Set B	20 Marks							

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	H	M	S
CO2	M	M	S	S	H
CO3	H	S	M	H	M

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
M.Malathi	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Duraiaraju	Name: Dr.R.Muthukumaran
N.Arul kumar	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS3N2	Title :	Batch :	2017-2020
		Non-Major Elective Paper-I: Advanced Applications in MS Excel Lab	Semester:	III
Hrs/Week:	1		Credits:	02

Course Objective

This course was designed for the intermediate student who has already mastered the basic skills and wants to gain more advanced skills to put to work in a business environment or for personal use.

Course Outcomes (CO)

K3	CO1	To apply the basic concepts of Excel such as mathematical function, Data function, text function
K4	CO2	To analyze the data using charts
K5	CO3	To validate the data using if statements.

Syllabus

Units	Contents	Hrs						
	SET A • In a new worksheet, create a table and insert information of student details. Use features of Format Menu. • Create employee table and calculate the salary. Use mathematical functions for the worksheet. • Create own templates in Excel. • Create and use data validation rules. • Create, manage, and format pivot tables and pivot charts. SET B • Create and write complex formulas. • Create and use IF statements. • Apply custom and prebuilt conditional formatting. • Work with functions to manipulate strings of text and data. • Create charts in excel EXTERNAL MARK (50 Marks) <table><tr><td>Record Note</td><td>10 Marks</td></tr><tr><td>Set A</td><td>20 Marks</td></tr><tr><td>Set B</td><td>20 Marks</td></tr></table>	Record Note	10 Marks	Set A	20 Marks	Set B	20 Marks	
Record Note	10 Marks							
Set A	20 Marks							
Set B	20 Marks							

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	H	H
CO2	H	M	M	S	S
CO3	M	M	H	H	M

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
M.Malathi	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Duraiaraju	Name: Dr.R.Muthukumaran
R.Deepa	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS412	Title :	Batch :	2017-2020
Hrs/Week:	4	Core V: .NET Programming	Semester:	IV
			Credits:	04

Course Objective

The course gives introduction to the .Net framework, library and various applications involved in it. It enables the students to learn and develop Windows and Web applications for the .NET platform.

Course Outcomes (CO)

K1	CO1	To remember the OOPs concepts such as class, objects, methods, Inheritance etc.
K2	CO2	To understand the concepts of the .NET framework as a whole and the technologies that constitutes the framework.
K3	CO3	To deploy various application oriented projects using ADO.NET
K4	CO4	To analyze industry defined problem and suggesting solution using .NET application.

Syllabus

Units	Contents	Hrs
Unit I	Introduction to .Net: .net framework- Introducing C#-Overview of C#-Literals, variables and data types-operators and expressions-Decision making and branching-decision making and looping-methods in C#-Arrays.	10
Unit II	Difference between VB6 and VB.Net-Object-Oriented programming and VB.Net-Data types-Variables-Operators-Arrays-Conditional logic.	9
Unit III	Procedures- Dialog boxes- File IO and System objects- Error handling- -Classes and Objects- Multithreading-Message Queue.	11
Unit IV	VB.Net IDE-Compiling and Debugging- Data access: ADO.Net- Visual studio .Net and ADO.Net. Windows Forms: Controls-Specific controls- Irregular forms.	11
Unit V	Vb.Net and web: Introduction to ASP.Net page framework- HTML server controls- Web controls- Validation controls- Events- State management- Tracing- Security.	9
	Total Contact Hrs	50
	<i>*Italicized texts are for self study</i>	
	Power point Presentations, Seminar, Quiz and Assignment	
TEXT BOOKS	1.Bill Evjen, Jason Beres, et.al, Visual Basic .Net programming, Wiley Dreamtech India (p) Ltd. ISBN 81-265-0254-1. 2. E.Balaguruswamy “Programming in C#” McGraw-Hill publication,2012 Edition.	

REFERENCES	1. K- Steven Holzner “Visual Basic .NET Programming Black Book” 2005 Edition. 2. E.Balaguruswamy “Programming in C#” McGraw-Hill publication,2012 Edition. 3. Jeffrey R. Shapiro”VB.NET Complete Reference” McGraw-Hill Companies, 2002. 4. Mc Downell “ASP.NET complete reference”, 2007.
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Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	M	M
CO2	H	H	S	S	M
CO3	H	M	S	H	S
CO4	H	S	H	S	H

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
K.Srinivasan	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
K.Kannika Parameswari	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS413	Title :	Batch :	2017-2020
Hrs/Week:	4	Core IX: Data and Communication Computer Networks	Semester:	IV
			Credits:	04

Course Objective

To enable the students to understand the concepts and principles of data communication and networking including topology, protocols, and types of networks.

Course Outcomes (CO)

K1	CO1	To remember the basic concepts Networks
K2	CO2	To get the idea on Connection-oriented and Connection-less networks
K3	CO3	To apply design principles and functionalities in OSI Reference Layers
K4	CO4	To analyze ISDN network, TCP/IP, etc.,

Syllabus

Units	Contents	Hrs
Unit I	Introduction: Communications and Networking-fundamental concepts-Data communications-Protocols-Standards-Signal Propagation-Analog and Digital Signals-Parallel and Serial Communications-Simplex, Half-duplex and full duplex communications-Multiplexing-Transmission errors-Detection and	9
Unit II	Transmission Media: Guided Media-Twisted Pair-Coaxial Cable-Optical fiber-Unguided Media –Microwave Communication-Satellite Communication–FDMA,CDMA,SDMA. Network Topology: Mesh Topology-Star Topology-Tree Topology-Ring Topology-Bus Topology-Hybrid Topology. Switching and Routing: Switching basics-Circuit switching-Packet switching-Message switching-Router and Routing.	11
Unit III	Networking protocols and OSI model -Protocols in Computer Communication-OSI Reference Models-Physical layer-Data link layer-Network layer-Transport Layer-Session Layer-Presentation Layer-Application Layer-Internet Layer.	9
Unit IV	Local Area Network (LAN) -Ethernet-Ethernet properties-CSMA/CD-Metropolitan Area Network (MAN)-Distributed Queue Dual Bus(DQDB)-Switched Multimegabit Data Services(SMDS)-Wide Area Network(WAN)-WAN Architecture	10
Unit V	Integrated Services Digital Network(ISDN) -ISDN Architecture-ISDN Interfaces-X.25 Protocol-Understanding and Working of X.25 protocol. TCP/IP: An Introduction to TCP/IP- Basics- IP Addresses-Logical Addresses-TCP/IP Example. ARP-RARP.	11
	Total Contact Hrs	50
	<i>*Italicized texts are for self study</i>	
	Power point Presentations, Seminar, Quiz and Assignment	

TEXT BOOKS	1 . Achyit S Godbole,"Data Communications And Computer Networks", - TataMcGrawHill, FourteenthEdition, 2007. 2. William Stallings," Data and Computer Communications", PearsonEducation, Sixth Edition, 20
REFERENCES	1. Andrew S. Tannenbaum,"Computer Networks", Prentice hall of India, FourthEdition, 2003. 2. W.Stallings,"Data and Computer Communications", Prentice hall of India, SeventhEdition, 2004.

Mapping

PSQ CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	M	H	M
CO2	M	M	S	M	S
CO3	M	M	M	H	S
CO4	M	S	M	S	M

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr.Antony Selvadoss Thanamani R.Deepa	Name: Dr.Antony Selvadoss Thanamani Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS414	Title :	Batch :	2017-2020
		Core X: Software Engineering	Semester:	IV
Hrs/Week:	4		Credits:	04

Course Objective

The objective of this course is to make the students to learn all the software development approaches and design methodologies and usage of tools in software development process.

Course Outcomes (CO)

K1	CO1	To recollect basic software quality assurance practices to ensure that software designs, development, and maintenance meet or exceed applicable standards.
K2	CO2	To understand concepts of software process models, management activities, requirement gathering.
K3	CO3	To implement proficiency of quality in software development process.
K4	CO4	To review and manage software projects in designing, testing, cost estimation and risk management.

Syllabus

Units	Contents	Hrs
Unit I	Software and Software Engineering :Nature of software- Defining software, Software Application Domains, Legacy Software-,Software Engineering, The software process, Software Engineering practice – The essence of Practice, General Principles -, Software Myths. Process models : A generic process model – Defining a framework activity, identifying a Task Set, Process Patterns -	9
Unit II	Understanding Requirements : Requirements Engineering, Establishing the groundwork – Identifying Stakeholders, Recognizing multiple viewpoints, Working toward Collaboration, Asking the first questions, Eliciting requirements – Collaborative requirement gathering, Quality function Deployment, Usage Scenario, Elicitation Work Products , Developing use cases, building the requirements model – Elements of the requirements Model, Analysis pattern,Negotiating requirements, validating requirements. Requirement Modelling :Requirement Analysis, Data modelling concepts, Class-based modelling, Requirement modelling strategies, Flow oriented modeling.	9
Unit III	Design Concepts :Design within the context of Software Engineering, The design process – Software quality guidelines and attributes, The evolution of software design -, Design concepts – Abstraction, Architecture, <i>Patterns</i> , Separation of concerns, Modularity, information hiding, Functional Independence, refinement, Aspects, Refactoring, Object Oriented design concepts- Design classes , The design Model – Data Design elements, Architectural Design elements, Interface Design Elements, Component-Level Design elements, Deployment level Design elements.	11

Unit IV	Quality concepts: Introduction, Software quality, Achieving software quality, Review metrics and their use, Informal reviews, Formal technical reviews . Software Quality Assurance: SQA tasks, Goals and metrics, Formal approaches to SQA, Statistical Software quality assurance-A Generic example –six sigma for software Engineering, Software Reliability-Measures of Reliability and availability-software safety, SQA plan.	10
Unit V	Project Management concepts: The management spectrum. Estimation for software projects: The project planning process, Software project estimation, Decomposition techniques, Empirical estimation models, Project scheduling. Risk management: <i>Risk identification</i> , Risk projection, The RMMM plan.	11
		50
	<i>*Italicized</i> texts are for self study	
	Power point Presentations, Seminar, Quiz and Assignment	
TEXT BOOKS	Pressman S Roger, Software Engineering A Practitioner’s Approach, McGraw Hill, International Editions, 7th edition, 2014.	
REFERENCES	1. Somerville, Ian, Software Engineering, Addison Wesley,9th Edition, 2010. 2. Rumbaugh, James, Object Oriented Modeling and design,searson Education, New Delhi, 2005. Evaluation Pattern.	

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	H	H
CO2	H	M	M	S	S
CO3	M	M	S	H	S
CO4	H	S	H	S	H

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
Dr.Antony Selvadoss Thanamani	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
P.Jayapriya	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS415	Title :	Batch :	2017-2020
Hrs/Week:	5	Core Lab V: .NET Programming Lab	Semester:	IV
			Credits:	02

Course Objective

To develop the student's knowledge in windows applications and web applications using visual studio.NET.

Course Outcomes (CO)

K3	CO1	To remember the basic concepts of oops.
K4	CO2	To get the idea of developing application projects using ADO.NET
K5	CO3	To validate programs using various validation controls.

Syllabus

Units	Contents	Hrs
	SET A • Create a Program to implement the concepts of Object oriented programming techniques in console Applications. • Create a program to implement multiple inheritance using interface in console Applications. • Create a program to validate the data members in the class using property in console Applications. • Create a program to catch the exceptions in console Applications. • Create a program to implement multithreading in console Applications. • Write a program to perform file operations in console Applications. • Create a directory list using tree view control in Windows Applications. • Create a calculator using basic controls in Windows Applications. • Create a notepad editor using Context menu strip and menu controls in Windows Applications. • Create an application to illustrate the use of dialog boxes in Windows Applications. • Create a web page to generate a photo gallery in Web Applications. • Create a website for online Quiz in web Applications. SET B • Write a program to implement stack operations using array in console Applications. • Write a program to implement Queue using array in console Applications. • Create an application for students proctorial report in Windows Applications. • Create an application for library management system in Windows Applications. • Create an application for Pay roll processing system in Windows Applications. • Create a program To generate electricity Bill in Windows Applications. • Create an application for encryption and decryption in Web Applications. • Create an Alumni registration form in Web Applications.	

• Create your own portal which describes yourself and your skills in Web Applications. • Create a portal for online purchasing system in Web Applications. • Create a portal and validate the web page using validation controls in Web Applications. • Create a web page and validate that page using client side scripting in Web Applications. • Create a crystal report for Alumni registration portal in Web Applications Program using AWT components.										
<table><tr><td>Observation Note</td><td>Record</td><td>5 Marks</td></tr><tr><td>Practical Skills</td><td></td><td>5 Marks</td></tr><tr><td>Model Exam</td><td></td><td>10 Marks</td></tr></table>	Observation Note	Record	5 Marks	Practical Skills		5 Marks	Model Exam		10 Marks	INTERNAL MARK (20 Marks) EXTERNAL MARK (30 Marks)
Observation Note	Record	5 Marks								
Practical Skills		5 Marks								
Model Exam		10 Marks								

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	H	M
CO2	S	M	S	S	S
CO3	S	S	M	H	M

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
K.Srinivasan	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
K.Kannika Parameswari	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS416	Title :	Batch :	2017-2020
Hrs/Week:	5	Core Lab VI: Multimedia Lab	Semester:	IV
			Credits:	02

Course Objective

The objective of this course is to make the students to learn the Multimedia tools like Adobe Photoshop and Macromedia Flash for creating advertisements, business brochures, cartoons and animated movies.

Course Outcomes (CO)

K3	CO1	To apply the different type of tools available in Photoshop to create simple applications.
K4	CO2	To interpret programs using various filters in Photoshop.
K5	CO3	To decide the appropriate tool used for creating animations or cartoons in Flash.

Syllabus

Units	Contents	Hrs
	SET A - Image Menu using Photoshop - Reduce Picture Size using Photoshop - Replace color in an image using Photoshop - Make a simple book cover by using basic functionalities using Photoshop - Transfer an object from one image to another and erase background using Photoshop - Add a pattern as background using Photoshop - Volcano Eruption using Flash - Drawing and creating text with effects using Flash - Logo using Flash - Bouncing ball using Flash - Robot arm using Flash SET B - Create India Map using Photoshop - Retouching photos using Photoshop - Take a logo and modify it using Photoshop - Alter an image using filters using Photoshop - Special Effects-Color in black and white image using Photoshop - Special Effects-Feathered Portraits (Soft fade) using Photoshop - Rotating globe using Flash - Fog Effect using Flash - Lightning Effect using Flash	

	• Animated Effect using Flash • Raining Effect using Flash										
	INTERNAL MARK (20 Marks) Marks)										
	EXTERNAL MARK (30										
	<table><tr><td>Record Note</td><td>5 Marks</td></tr><tr><td>Set A</td><td>10 Marks</td></tr><tr><td>Set B</td><td>15 Marks</td></tr></table>			Record Note	5 Marks	Set A	10 Marks	Set B	15 Marks		
Record Note	5 Marks										
Set A	10 Marks										
Set B	15 Marks										
<table><tr><td>Observation Note</td><td>Record</td><td>5 Marks</td></tr><tr><td colspan="2">Practical Skills</td><td>5 Marks</td></tr><tr><td colspan="2">Model Exam</td><td>10 Marks</td></tr></table>			Observation Note	Record	5 Marks	Practical Skills		5 Marks	Model Exam		10 Marks
Observation Note	Record	5 Marks									
Practical Skills		5 Marks									
Model Exam		10 Marks									

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	S	H	S
CO2	S	H	M	S	M
CO3	S	M	S	H	H

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
M.Malathi	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
N.Arul kumar	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS4N1	Title :	Batch :	2017-2020
Hrs/Week:	1	Non-Major Elective Paper-II: Flash Lab	Semester:	IV
			Credits:	02

Course Objective

The objective of this course is to make the students to learn about Macromedia Flash and develop their skills in creating animations and special effects by using the tools.

Course Outcomes (CO)

K3	CO1	To apply the various tools available in Flash for creating animations.
K4	CO2	To get the idea about timeline, frames and motion tweens.
K5	CO3	To validate the animations by running the test movies.

Syllabus

Units	Contents	Hrs						
	SET A • Bouncing ball using Flash • Volcano Eruption using Flash • Drawing and creating text with effects using Flash • Logo using Flash • Robot arm using Flash SET B • Rotating globe using Flash • Fog Effect using Flash • Lightning Effect using Flash • Animated Effect using Flash • Raining Effect using Flash EXTERNAL MARK (50 Marks) <table><tr><td>Record Note</td><td>10 Marks</td></tr><tr><td>Set A</td><td>20 Marks</td></tr><tr><td>Set B</td><td>20 Marks</td></tr></table>	Record Note	10 Marks	Set A	20 Marks	Set B	20 Marks	
Record Note	10 Marks							
Set A	20 Marks							
Set B	20 Marks							

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	M	M
CO2	S	H	S	H	H
CO3	H	S	H	S	S

S- Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
M.Malathi	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Duraiaraju	Name: Dr.R.Muthukumaran
S.Sharmila	Signature:	Signature:	Signature:

Programme code:	B.Sc	Programme Title :	Bachelor of Science (Computer Science)	
Course Code:	17UCS4N2	Title :	Batch :	2017-2020
		Non-Major Elective Paper-II: Internet Applications Lab	Semester:	IV
Hrs/Week:	1		Credits:	02

Course Objective

To enable the students to know how to work with internet, the usage of internet and its applications.

Course Outcomes (CO)

K3	CO1	To Know about basic of internet
K4	CO2	To analyze the concept through online.
K5	CO3	To get idea about online applications.

Syllabus

Units	Contents	Hrs						
	SET A • Download a information about “Power of Indian president” from a website by using a search engine. • Select two electronics items by e-shopping. • Select mobile phone items by e-shopping. • Book Online train Tickets from coimbatore to Chennai. • Using Search Engine download information on “Benefits of Yoga”. • Open an email account in your names in gmail/yahoomail/hotmail. • Write e-mail to Pradeep by marking a blind copy to Priya. • Download information about “greatness of Himalayas for tourism interest” in powerpoint presentation. • Create an electronic greeting card with personal remarks and pictures. SET B • Download information about greatness of Himalayas for tourism interest. • Write a congratulating letter to your friend on his promotion using mail. • Download research articles on “Information technology Applications” and save as doc. Files. • Download m.phil application form in bharathiar university • Search the information about “ powerpoint creation” in youtube • Download pdf about the concept of “Environmental studies”. • Convert word to pdf and pdf to word using online convertor. • Pay EB-Bill through online EXTERNAL MARK (50 Marks) <table><tr><td>Record Note</td><td>10 Marks</td></tr><tr><td>Set A</td><td>20 Marks</td></tr><tr><td>Set B</td><td>20 Marks</td></tr></table>	Record Note	10 Marks	Set A	20 Marks	Set B	20 Marks	
Record Note	10 Marks							
Set A	20 Marks							
Set B	20 Marks							

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	H	H
CO2	H	M	M	S	S
CO3	M	M	H	H	M

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name with Signature	CDC	COE
M.Malathi	Name: Dr.Antony Selvadoss Thanamani	Name: Dr.M.Duraiaraju	Name: Dr.R.Muthukumaran
R.Deepa	Signature:	Signature:	Signature: