NALLAMUTHU GOUNDER MAHALINGAM COLLEGE
(AUTONOMOUS)
DEPARTMENT OF INFORMATION TECHNOLOGY
UNDER CBCS PATTERN GUIDED BY UNIVERSITY AND TANSCHE

(FOR THE STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2016-2019 BATCH)

S. No.	PART	SUBJECT CODE	SUBJECT TITLE	HRS. WEEK	CREDIT	Ex.Hrs	MAX MARKS INT	MAX MARKS EXT	MAX MARKS TOTAL
SEMESTER I									
1	I	16UTL101 / 16UHN101 / 16UFR101	TAMIL - I / HINDI - I / FRENCH - I	6	3	3	25	75	100
2	II	16UEN101	ENGLISH - I	5	3	3	25	75	100
3	III	16UIT101	PROGRAMMING IN 'C'	4	4	3	25	75	100
4		16UIT102	COMPUTER SYSTEM ARCHITECTURE	5	4	3	25	75	100
5		16UIT1A1	STATISTICAL METHODS	4	4	3	25	75	100
6		16UIT103	LAB. I - PROGRAMMING IN 'C'	4	2	3	20	30	50
7	IV	16UHR101	HUMAN RIGHTS	1	2	2		50	50
8		16HEC101	HUMAN EXCELLENCE COURSE - PERSONAL VALUES	1	1	2	25	25	50
		TOTAL		30	23				650
SEMESTER II									
9	I	16UTL202 / 16UHN202 / 16UFR202	TAMIL - II / HINDI - II / FRENCH - II	6	3	3	25	75	100
10	II	16UEN202	ENGLISH - II	5	3	3	25	75	100
11	III	16UIT204	OBJECT ORIENTED PROGRAMMING WITH JAVA	4	4	3	25	75	100
12		16UIT205	DATA STRUCTURES	4	4	3	25	75	100
13		16UIT2A2	MATHEMATICAL FOUNDATIONS FOR COMPUTER SCIENCE	4	4	3	25	75	100
14		16UIT206	LAB. II - PROGRAMMING IN JAVA	4	2	3	20	30	50
15	IV	16EVS201	ENVIRONMENTAL STUDIES	2	2	2		50	50
16		16HEC202	HUMAN EXCELLENCE COURSE - FAMILY VALUES	1	1	2	25	25	50
		TOTAL		30	23				650
SEMESTER III									
17	III	16UIT307	OPERATING SYSTEMS	6	4	3	25	75	100
18		16UIT308	RELATIONAL DATABASE MANAGEMENT SYSTEM	5	4	3	25	75	100
19		16UIT309	CLIENT/SERVER COMPUTING	5	4	3	25	75	100
20		16UIT3A3	MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING	6	4	3	25	75	100
21		16UIT310	LAB. III - RDBMS & JAVA (FRONT END)	6	3	3	40	60	100
22	IV	16UIT3N1/N2	SKILL BASED NON-MAJOR- I	1	2	2		50	50
23		16HEC303	HUMAN EXCELLENCE COURSE - PROFESSIONAL VALUES	1	1	2	25	25	50
		TOTAL		30	22				600
SEMESTER IV									
24	III	16UIT411	COMPUTER NETWORKS	5	4	3	25	75	100
25		16UIT412	ADVANCED JAVA PROGRAMMING	5	4	3	25	75	100
26		16UIT413	C#.NET PROGRAMMING	5	4	3	25	75	100
27		16UIT4A4	CLOUD COMPUTING	5	4	3	25	75	100
28		16UIT414	LAB. IV - ADVANCED JAVA PROGRAMMING	4	2	3	40	60	100
29		16UIT415	LAB. V - PROGRAMMING IN C# . NET	4	2	3	40	60	100
30	IV	16UIT4N3/N4	SKILL BASED NON-MAJOR- II	1	2	2		50	50
31		16HEC404	HUMAN EXCELLENCE COURSE - SOCIAL VALUES	1	1	2	25	25	50
32	V	16UNC401/ 16UNS402/ 16USG403	EXTENSION ACTIVITIES (NCC, NSS, AND SPORTS & GAMES)		1		50		50
		TOTAL		30	24				750

SEMESTER V									
33	**III**	**16UIT516**	**OPEN SOURCE METHODOLOGIES**	**6**	**4**	**3**	**25**	**75**	**100**
34		**16UIT517**	**MOBILE COMPUTING**	**6**	**5**	**3**	**25**	**75**	**100**
35		**16UIT518**	**MAJOR ELECTIVE - I**	**5**	**4**	**3**	**25**	**75**	**100**
36		**16UIT519**	**LAB. VI - OPEN SOURCE METHODOLOGIES**	**5**	**3**	**3**	**40**	**60**	**100**
37		**16UIT520**	**LAB. VII - SOFTWARE TESTING TOOLS**	**5**	**3**	**3**	**40**	**60**	**100**
38	**IV**	**16GKL501**	**GENERAL KNOWLEDGE & GENERAL AWARENESS**	**SS**	**2**	**2**		**50**	**50**
39		**16UIT5S1/S2**	**SKILL BASED MAJOR ELECTIVE - LAB. I**	**2**	**2**	**2**		**50**	**50**
40		**16HEC505**	**HUMAN EXCELLENCE COURSE - NATIONAL VALUES**	**1**	**1**	**2**	**25**	**25**	**50**
		TOTAL		**30**	**24**				**650**
SEMESTER VI									
41	**III**	**16UIT621**	**COMPUTER GRAPHICS**	**5**	**4**	**3**	**25**	**75**	**100**
42		**16UIT622**	**MAJOR ELECTIVE - II**	**6**	**5**	**3**	**25**	**75**	**100**
43		**16UIT623**	**MAJOR ELECTIVE - III**	**6**	**5**	**3**	**25**	**75**	**100**
44		**16UIT624**	**LAB. VIII - GRAPHICS & MULTIMEDIA**	**5**	**3**	**3**	**40**	**60**	**100**
45		**16UIT625**	**PROJECT**	**5**	**4**		**20**	**80**	**100**
46	**IV**	**16UIT6S3/S4**	**SKILL BASED MAJOR ELECTIVE - LAB. II**	**2**	**2**	**2**		**50**	**50**
47		**16HEC606**	**HUMAN EXCELLENCE COURSE - GLOBAL VALUES**	**1**	**1**	**2**	**25**	**25**	**50**
		TOTAL		**30**	**24**				**600**
TOTAL				**180**	**140**				**3900**

*** SS - Self Study**

List of Major Elective Papers V & VI Semesters only (can choose any one of the paper)

Elective I	A. Data Mining and Warehousing B. Software Engineering C. Embedded Systems
Elective II	A. Multimedia Techniques B. Cryptography & Network Security C. Digital Image Processing
Elective III	A. E-Commerce B. Software Project Management C. Artificial Intelligence

List of Elective Papers III, IV, V & VI Semesters only (can choose any one of the paper)

Elective I (SBN)	A. Computer Fundamentals B. Internet Basics
Elective II(SBN)	A. Information Security B. Hardware & Networking
Elective I -SBM	A. Web Programming Lab. (PHP) B. Web Programming Lab. (JSP)
Elective II -SBM	A. Web Programming Lab. (Java Script) B. Web Programming Lab. (ASP)

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT101	**Title:** Programming in C	**Semester:** I	
Hrs/Week:	4	**Credit:** 4	
Objectives	On successful completion of this subject the students should have :- - Writing programming ability on Logic development, clear view on control structures, Pointers (memory management), file handling, etc.,		

Units	Content	Hrs
Unit I	Programming development methodologies - Programming style – **Problem solving techniques:** Algorithm, Flowchart, Pseudo code. Structure of a C program – C character set - Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and initializing variables – Type conversion. Operators and Expressions.	12
Unit II	**Formatted and Unformatted I/O functions. Decision statements:** If, If...Else, Nested If. Else, Break, Continue, Go to, Switch, Nested switch...case, switch...case and nested ifs statements. **Loop control statements:** For, Nested for, While, Do...while and with while loops.	10
Unit III	**Arrays**: Initialization, definition, characteristics, One dimensional, predefined streams, two dimensional, three or multi dimensional arrays – sscanf (), sprintf (). **String**s: Declaration and initialization, displaying, standard functions and applications. **Pointers:** Futures, Declarations, arithmetic operations, pointers and arrays, two dimensional arrays, array of pointers, pointers to pointers, pointers and strings, void pointers.	10
Unit IV	**Functions**: Definition, declaration, return statements, types, call by value and reference, returning more multiple values, function as an argument, function with arrays and pointers. **Structure and Union:** Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Pointer to structure, structure and functions, typedef, Bit fields, Enumerated data types, Union, union of structures.	10
Unit V	**Files:** Streams and file types, Steps for file operation, File I/O, Structures read and write, Other file functions, searching errors in reading or writing files, low level disk I/O, Command line arguments, I/O redirection. **Preprocessor directives:** #define, #include, #ifndef, #error, #line, #pragma, and Predefined macros.	10
	Total Contact Hrs	52
Text Books:	1. Ashok .N. Kamthane. (2004). *PROGRAMMING AND DATA STRUCTURES*. First Indian Print. Pearson Education: ISBN 81-297-0327-0.	
Reference Books:	1. Balagurusamy. E. (1998). *Programming in ANSI C*. Tata McGraw-Hill. 2. Pradip Dey, Manas Ghosh. (2008). *Computer Fundamentals and Programming in c.* Oxford.	

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R. Sekar				
V. Prabavathi				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT102	**Title:** Computer System Architecture	**Semester:** I	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students should have:- - Basic Computer and CPU organization, Input-output organization, Pipeline, Vector Processing and Memory organization.etc.,		

Unit	Content	Hrs
Unit I	**Basic Computer Organization and Design:** Instruction Codes - Control Registers – Control Instructions – Instruction Cycle – Memory Reference Instructions – Input Output and Interrupt.	**13**
Unit II	**Central Processing Unit (CPU):** General Register Organization – Stack Organization - Instruction Formats – Addressing Modes – Data Transfer and Manipulation – Program Control.	**13**
Unit III	**Input – Output Organization:** Peripheral Devices- Input – Output Interface – Asynchronous Data Transfer - Direct Memory Access (DMA) - CPU-IOP Communication.	**12**
Unit IV	**Pipeline and Vector processing:** Parallel Processing – Pipelining – Arithmetic Pipeline – Instruction Pipeline – RISC Pipeline – Vector processing – Array Processing.	**13**
Unit V	**Memory Organization:** Memory Hierarchy – Main Memory - Auxiliary Memory - Cache Memory – Associative Memory - Virtual Memory.	**14**
	Total Contact Hrs	**65**
Text Books:	1. M. Morris Mano. (2008). *Computer System Architecture.* 3rd Edition .PHI	
Reference Books:	1. M. Carter. (2001). *Computer Architecture*. Schaum's outline series, TMH Pub. 2. William Stallings. (2006), Computer System and Architecture,8th Edition, Pearson Publication.	

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R. Sekar				
V. Prabavathi				

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2016-2017
Subject Code: 16UIT103	**Title:** Lab. I Programming in 'C'	**Semester:** I
Hrs/Week:	4	**Credit:** 2
Objectives	On successful completion of this Lab. students should have: - Understanding, Learning and Applying the various Programming concepts of C. - Improving the Programming skills in C.	

	Content	Hrs
	SAMPLE PROGRAM LIST **Pre Model** 1. Create a C program to find the Greatest of three numbers 2. Create a C program to display the Fibonacci series 3. Create a C program to generate the Armstrong number 4. Create a C program to generate the Prime number 5. Create a C program to calculate the Sum of individual digits 6. Create a C program to calculate Sum of n numbers 7. Create a C program to arrange the no.'s in Ascending order & Descending order 8. Create a C program to display the Alphabetic order 9. Create a C program to check the Palindrome 10. Create a C program to calculate the Mean, median & mode **Model** 11. Create a C program to calculate the Standard deviation & variance 12. Create a C program to calculate the Rank correlation 13. Create a C program to perform arithmetic operations on matrix 14. Create a C program to calculate the Transpose of a Matrix 15. Create a C program using structures 16. Create a C program using Pointers 17. Create a C program to find the nCr using functions 18. Create an Employee file program using the sequential File operations 19. Create a C program to find the Vowel count in a text file	**52**

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R. Sekar				
K. Vijayakumar				

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2016-2017
Subject Code: 16UIT1A1	**Title:** Statistical Methods	**Semester:** I
Hrs/Week:	4	**Credit:** 4
Objectives	On successful completion of this subject the students should have:- Learning various applications of statistical methods like Central tendency, Dispersion, Correlation and regression, Probability and Sampling theory for Computer Science.	

Units	Content	Hrs
Unit I	**Measures of central tendency:** Mean: Arithmetic Mean, Weighted Arithmetic Mean, Combined Arithmetic Mean, Geometric Mean, Harmonic Mean, Median and mode – Relation between mean, median and mode.	12
Unit II	**Dispersion:** Range - Mean deviation - Standard deviation - Coefficient of Variation – Quartile Deviation.	9
Unit III	**Correlation:** Karl Pearson`s Coefficient of Correlation – Rank correlation**. Regression:** Regression Equations - Difference between correlation & Regression.	9
Unit IV	**Probability:** Permutation and Combination- Important terms in probability- Measurement of Probability: Classical Approach- Relative Frequency theory of probability – Personalistic view of probability – Axiomatic Approach of probability. Theorems of probability: Addition – Multiplication – Odds.	12
Unit V	**Sampling Theory and Test of Significance**: Introduction – Estimation theory – Testing of hypothesis – Testing if significance for large samples and small samples. **Chi Square Test:** Introduction – x^2 test, Degrees of freedom, Test of goodness of fit, Test of Independence.	10
	Total Contact Hrs	**52**
Text Books:	1. Pillai R. S. N. Bagavathi V. (2005). *STATISTICAL METHODS***.** Sultan Chand and Sons & Company Ltd. New Delhi.	
Reference Books:	1. Gupta. S.C. Kapoor. V.K. (Reprint 2014). *Fundamental Of Mathematical Statistics*.11th edition. S.Chand and Sons.	

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K. Vijayakumar				
R.Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT204	**Title: OBJECT ORIENTED PROGRAMMING WITH JAVA**	**Semester:** II	
Hrs/Week:	4	**Credit:** 4	
Objectives	On successful completion of this paper, the students will have knowledge about the basic concepts of classes, methods, Interfaces, Multithreads, Packages, Applets, JDBC and etc.		
Units	**Content**		**Hrs**
Unit I	Introduction to Object-Oriented Programming – The Java language – **Introduction to Classes**: Instance variables – Class variables – Instance Methods – Constructors – Class Methods – Declaring Objects – Garbage Collection. **Classes and Methods in Detail:** Method Overloading – Constructor Overloading – The *this* Reference – Using Objects in Method – Recursion – Access Modifiers – Inner Classes – Command Line Arguments- The super reference- The final Keyword.		10
Unit II	**Abstract Classes and Interfaces**: The abstract Classes and Methods – Defining Interface – Implementing Interfaces – Extending Interface – Interface Reference. **Exception Handling**: Types of Exceptions-Uncaught Exceptions – Handling Exceptions – User Defined Exceptions. **Multithreaded Programming:** Concept of Threads – Thread Creation – Thread's Life Cycle – Thread Scheduling – Synchronization and Deadlock – Inter-thread Communication.		10
Unit III	**Packages and Access Modifiers**: Packages – An Introduction – The package Declaration – The import Statement – Illustration Package – The Java Language Packages. **Handling Strings**: Creating Strings – Operations on Strings – Character Extractor Methods – String Comparison Methods **Input Output Classes**: Input and Output Operations – Hierarchy of classes in java.io Package – File class – Input Stream and Output Stream Classes – FilterInputStream and FilterOutputStream Classes – Reader and Writer Classes – RandomAccessFile Class- StreamTokenizer.		11
Unit IV	**Applets**: Applet Basics – Applet Life Cycle – Running Applets – Methods of the Applet Class – Font Class – Font Metrics Class. **Abstract Windowing Toolkit:** AWT classes – Hierarchy of Classes – Control Fundamentals – Component Class – Basic Component Classes – Various Container Classes – Frame Window in an Applet – Menus.		10
Unit V	**Layout Management and Event Handling**: Layout Management Policies – Standard Layout Managers – Handling Events – Hierarch y of Event Classes – Event Delegation Model – Event Classes – Event Listener Interfaces – Adapter Classes. **Images**: Image file format-the image class - Imageobserver - Double Buffering-Media tracker.		11
	Total Contact Hrs		**52**
Text Book:	1. Instructional Software Research and Development (ISRD) Group. 2001. "*Introduction to Object Oriented Programming through Java*", Tata McGraw-Hill Publishing Company Limited, New Delhi.		
Reference Books:	1. E. Balagurusamy. (2007). "*Programming with JAVA – A Primer*", Tata McGraw-Hill Publishing Company Limited, Third Edition.		

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K.Vijayakumar				
C.R. Durgadevi				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT205	**Title:** DATA STRUCTURES	**Semester:** II	
Hrs/Week:	4	**Credit:** 4	
Objectives	On successful completion of this subject the students should have knowledge about Linear data structures, Queues, Linked list, Trees, searching, sorting and Hashing.		

Units	Content	Hrs
Unit I	**Arrays:** Introduction to Linear and Non Linear Data Structures - Arrays in C - Single Dimensional Arrays - Array Operations. **Linked List:** Introduction to List and Linked Lists - Dynamic Memory Allocation - Basic Linked List Operations-Doubly Linked List - Circular Linked List - Atomic Node Linked List - Linked List in Arrays - Linked List versus Arrays.	13
Unit II	**Stacks:** Introduction to Stacks - Stack as an Abstract Data Type - Representation of Stacks Through Arrays - Representation of Stacks Through Linked List - Applications of Stacks - Stacks and Recursion.	8
Unit III	**Queues:** Introduction - Queue as an Abstract Data Type - Representation of Queues - Circular Queues - Double Ended Queues - Dequeue - Priority Queues - Application of Queues.	9
Unit IV	**Binary Trees:** Introduction to nonlinear Data Structure - Introduction to Binary Trees - Types of Trees - Definitions - Properties - Representation - Operations – Traversal - Reconstruction - Counting Number - Applications.	11
Unit V	**Searching and Sorting**: Sorting - An Introduction - Efficiency of sorting Algorithms - Bubble sort - Selection sort - Quick sort - Insertion sort - Merge sort - Binary Tree Sort - Radix sort - Shell sort – Heap sort. **Searching**: An Introduction - Binary Search-Indexed Sequential search. **Hashing:** An Introduction - Hash functions - collision in Hashing - Collision or Conflict Resolution Techniques - Open Addressing - Analysis of Open Addressing – Chaining - Analysis of Chaining.	11
	Total Contact Hrs.	52

Text Books:	1. ISRD group. (2010). *Data structure using C*. Seventh Reprint. Tata McGraw-Hill.
Reference Books:	1. Aaron .M. Tanenbaum, Yedidyeh Langsam, Moshe .J. Augenstein. (2007). *Data Structure using C*. Third edition.PHI Pub. 2 Ashok. N. Kamthane. (2004). *Programming And Data Structures*. First Indian Print. Pearson Education. ISBN 81-297-0327-0.

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C.R. Durga Devi				
K. Vijayakumar				

Department	Information Technology		
Course	B.Sc.	**Effective from the year**2016-2017	
Subject Code: 16UIT206	**Title:** Lab. II - Programming in Java	**Semester:** II	
Hrs/Week:	4	**Credit:** 2	
Objectives	On successful completion of this Lab. students should have: - Understanding, Learning and Applying the various Programming concepts of Java like inheritance, multithreading, exception handling, applet, package etc., - Improving the Programming skills in Java.		
	Content		**Hrs**
	SAMPLE PROGRAM LIST **Pre Model** 1. Program to generate a Pascal Triangle 2. Program for roots of a Quadratic Equation 3. Program for merging two sorted arrays 4. Program for counting letter frequencies in a given string 5. Program for Multithreading 6. Program for preparing mark list using inheritance 7. Program for Multiple inheritance 8. Program for Exception Handling 9. Program for creating your own package **Model** 10. Program that counts the number of lines, words and characters in a given text file 11. Program that right-justifies a text file 12. Program that display a digital clock using applet 13. Program that generates a human face using applet 14. Create an applet containing three buttons labeled red, green and blue. Depending on the button pressed, the background color of the applet should change 15. Create an applet that accepts two numbers in two text fields. Add a button labeled "equals" which when pressed should add the two numbers and display the result in the third text file.		**52**

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K. Vijayakumar				
C.R. Durgadevi				

Department	Information Technology		
Course	B.Sc.,	Effective from the year: 2016-2017	
Subject Code: 16UIT2A2	Title: Mathematical Foundations for Computer Science.	Semester: II	
Hrs/Week:	4	Credit: 4	
Objectives	On successful completion of this subject the students should have Matrices, Set theory. Mathematical logic, Relations and Graph theory.		
Unit	Content		Hrs
Unit I	**Matrices**: Introduction – Definition - Determination – Types of Matrices- Multiplication, Transpose of a matrix - Inverse of a matrix –Definition, Examples – Rank of a Matrix.		10
Unit II	**Set Theory**: Introduction-Set & its Elements-Set Description-Types of sets-Venn-Euler Diagrams - Set operations & Laws of set theory - Fundamental products - partitions of sets - min sets - Algebra of sets and Duality – Inclusion and Exclusion principle		10
Unit III	**Mathematical Logic**: Introduction - Propositional Logic –Introduction, Proofs – Basic logical operations – Tautologies – Contradiction - Predicate calculus.		10
Unit IV	**Relations**: Binary Relations – Set operation on relations -Types of Relations – Partial order relation – Equivalence relation – Composition of relations – Functions – Types of functions – Invertible functions – Composition of functions.		10
Unit V	**Graph Theory**: Basic terminology – paths, cycle & Connectivity – Sub graphs – Types of graphs – Representation of graphs in computer memory - Trees - Properties of trees – Binary trees – traversing Binary trees – Computer Representation of general trees.		12
	Total Contact Hrs		52
Text Books:	1. Dr. Venkataraman. M. K. (1998). *Engineering Mathematics*. Third edition. Volume II: NPC. (Unit I) 2. Sharma. J.K. (2005). *Discrete Mathematics*. Second Edition. Macmillan India Ltd (Rest of Units).		
Reference Books:	1. Kenneth H. Rosen. (2003). Discrete Mathematics and Its Applications, 5th edition, McGraw Hill Pub. 2. Dr. Venkataraman. M. K. Dr. Sridharan. N, Chandarasekaran. N.(2000). *Discrete Mathematics*. The National publishing Company Chennai.		

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V. Prabavathi				
R.Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT307	**Title:** Operating Systems	**Semester:** III	
Hrs/Week:	6	**Credit:** 4	
Objectives	On successful completion of this subject the students should have: - Basic concepts of operating system, memory management, process management, information management, deadlocks. - Basic concepts of parallel processing and distributed processing and Windows Vista.		
Units	**Content**		**Hrs**
Unit I	**Operating System-Functions and Structure:** Operating System Definition- Different services of Operating System- Uses of System Calls- Issue of Portability- Operating System Structure- Virtual machine- Booting. **Information Management:** Introduction - The File System- Introduction - Block and Block numbering scheme - Relationship between OS and DMS - File Directory entry - Open/Close Operations - Device Driver (DD): The Basics, I/O Procedure, I/O Scheduler.		15
Unit II	**Process Management:** Introduction – States – Transitions – Operations on a Process – Process Scheduling – Multithreading. **Inter Process Communication** - The Producer Consumer Problem - Solutions to Producer Consumer problems: Interrupt Disabling/Enabling, Lock-flag, and Alternating Policy - Classical IPC Problems.		15
Unit III	**Deadlocks:** Introduction - Graphical Representation of Deadlock - Deadlock Prerequisites - Deadlock Strategies. **Memory Management**: Introduction - Single Contiguous Memory Management - Fixed Partition Memory Management - Variable Partitions - Non Contiguous Allocation General Concepts: Paging, Segmentation - Virtual Memory Management System: Jargon – Page Replacement Policies.		16
Unit IV	**Parallel Processing:** Introduction - Difference between Distributed and Parallel Processing - Advantages of Parallel Processing - Machine Architectures supporting Parallel Processing - Operating System for Parallel Processing. **Distributed Processing**: Introduction - Distributed Processing - Process Migration – RPC - Distributed Processes - Distributed File Management - Cache Management.		16
Unit V	**Windows Vista:** History – Programming: Native NT API – Win32 API – Registry. Structure – Booting – Processes and Threads – Memory Management – NTFS – Security.		16
	Total Contact Hrs		**78**
Text Books:	1. Achyut s Godbole. (2002). *Operating Systems*, TMH Publications. (1 - 4 units). 2. Mark G. Sobell, (2004 Edition), *A Practical Guide to Red Hat Linux 8*, Pearson Education.(Unit V) 3. W. Frank Ableson, Robisen, Chris king. (2011), *Android in Action,* 2nd Edition, Dream Tech Press. .(Unit V)		
Reference Books:	1. H. M Deitel. (2003). *Operating Systems*, 2nd Edition, Pearson Education Publication. 2. John J. Donovan. (1991). *Systems Programming*, TMH Publications.		

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C.R.Durgadevi				
B. Kalaiselvi				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT308	**Title:** Relational Database Management System	**Semester:** III	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of DBMS, Oracle, Normalization, Data Management and retrieval, PL/SQL Commands and Operations.		

Units	Content	Hrs
Unit I	**Database Concepts: A Relational approach:** Database – Relationships – DBMS– Relational Data Model – Integrity Rules – Theoretical Relational Languages. **Database Design: Data Modeling and Normalization**: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams - Demoralization – Another Example of Normalization. **DFD:** Definition – example – Rules- Decomposition.	12
Unit II	**Oracle9*i*: Overview:** Introduction. **SQL *Plus:** Environment – SQL – Commands – Errors & Help – Alternate Text Editors - Worksheet - *i*SQL *Plus. **Oracle Tables:** DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.	13
Unit III	**Working with Table:** DML – adding a new 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.	12
Unit IV	**Multiple Tables: Joins and Set operations**: Join – Set operators. **Subqueries:** Subquery - Correlated Subquery. **PL/SQL:** Introduction – 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 – SQ L in PL/SQL – Data Manipulation – Transaction Control statements	13
Unit V	**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. **PL/SQL: Composite Data Types:** Records – Tables – V arrays. **Named Blocks**: Procedures – Functions – Packages –Triggers –Data Dictionary Views.	15
	Total Contact Hrs	**65**
Text Book:	1. Nilesh Shah. (2009), *Database Systems Using Oracle*, 2nd edition, PHI.	
Reference Books:	1. Arun Majumdar & Pritimoy Bhattacharya. (2001). Database *Management Systems,*TMH. 2. Jeffrey A.Hoffer, Joey F.George, Joseph S.Valacich, (2009). *Modern Systems Analysis and Design*. IInd Edition. Vth Edition. Pearson Education Pub's. 3. Gerald V. Post.(2005). *Database Management Systems*, 3rd edition, TMH.	

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C.R. Durga devi				
R.Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT309	**Title:** Client/Server Computing	**Semester:** III	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of Client/Server computing. They learn the Middleware, Architecture, and Security of Client/Server Computing.		
Units	**Content**		**Hrs**
Unit I	**Introducing Client/Server:** Information-Move to Client/Server - Client/Server technology-Benefits-Ignore of Myths- Client/Server Models. **Planning for Client/Server.**		14
Unit II	**Building the Blueprint:** Considerations for migrating to Client/Server-Business impact of Client/Server-Hardware Impact of Client/Server-Client/Server technology-Software Impact of Client/Server. **Steps for Migrating to Client/Server:** Client/Server factors for success – Sample plan.		15
Unit III	**Understanding Middleware:** Basic View-High level Middleware communication types–Main types of Middleware. Application Development: Client/Server Architecture. **Upgrading to Client/Server:** Upgrading hardware to Client/Server- Upgrading software to Client/Server- Upgrading Networks to Client/Server.		13
Unit IV	**Supporting Client/Server - Performance Tuning and Optimization:** Client Performance- Server Performance-Database Performance-Network Performance.		11
Unit V	**Securing a Client/Server:** Changing IT Environment-Building Security Requirements-Building Security Solutions-Security for Client/Server. **Future of Client/Server**: Improvements at the client - Improvements at the Server - Improvements at the Network		12
	Total Contact Hrs		**65**
Text Book	1. Neil Jenkins, et al, (1996), "*Client/Server Unleashed*" Tec Media Publications, First Edition.		
Reference Book:	1 Robert Orfali, Dan Harkey & Jeri Edwards, (2002), "*The Essential Client / Server Survival Guide*", Galgotia Publication Private Limited, Second Edition. 2. Joe Salemi,(1994), "*Guide to Client Server Databases*", BPB Publications, Edition.		

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R.SEKAR				
V. PRABAVATHI				

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2016-2017
Subject Code: 16UIT310	**Title:** Lab. III - RDBMS & Java (Front End)	**Semester:** III
Hrs/Week:	6	**Credit:** 3
Objectives	On successful completion of this Lab. students should have: - Understanding, Learning and Applying the various Programming concepts of ORACLE (Basic commands, Trigger, Functions, etc.,) - Improving the Programming skills in JAVA (JDBC-ODBC)	

	Content	Hrs
	SAMPLE PROGRAM LIST **Pre Model** 1. Create the following table *(PK - Primary Key, FK – Foreign Key)* **cat_head, route_head, place_head, route_detail, ticket_detail, ticket_head** with the mapping given below: cat_head route_head *(cat_code PK) (cat_code FK),* route_head route_detail *(Route_id PK) (Route_id FK),* ticket_head ticket_detail *(tick_no PK) (Tick_no FK),* place_head route_detail *(Place_id PK) (Place_id FK),* (i) Alter the table ticket_header to add a check constraint on ticket_no to accept Values between 1 and 500, (ii) Alter table route_header to add a column with data type as long. 2. (a) Insert values to above tables (b) Display only those routes that originate in madras and terminate at Cochin (c) Display only distinct category code from the table route_header in descending manner. Update the table route_header to set the distance between madras and Coimbatore as 500 3. a. Select rows from ticket_details such that ticket number greater than any ticket_number in Ticket_header. b. Select rows from route_header such that the route_id are greater than all route_id in route_detail where place id is “100”. c. Create view tick from ticket_header with Ticket_no, Origin, Destination, route_id	

	Model 1. a. Write a PL/SQL block to update the bus_station to be “ERODE” where place_id is ’01’ or ‘05’ [place_header] b. Write a PL/SQL block to satisfy the following condition by accepting the route_id as user input. If the distance is less than 500 than update the fare to be 200 c. Write a Database trigger before insert for each row on the table route_detail not allowing transaction on Saturday / Sunday d. Write a Database trigger before delete for each row not allowing deletion and give the appropriate message on the table route_detail 2. Implement database connectivity using JDBC. 3. Develop an application using Java as Front end.	**78**

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R. Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT3A3	**Title:** Microprocessor & Assembly Language Programming.	**Semester:** III	
Hrs/Week:	**6**	**Credit: 4**	
Objectives	On successful completion of this subject the students should have: - Understand the Evolution of microprocessor, Addressing modes and PIN diagrams of various processors, Assembly Language Programs, Other Microprocessors, Advanced Microprocessor, Interfacing A/D converter and Applications.		
Units	**Content**		**Hrs**
Unit I	**Introduction to Microprocessors**: Evolution of microprocessors – Single- chip Microcomputer – Embedded Microprocessors – Bit - Slice processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Symbolic Processors – Digital Signal Processors Intel 8086 – Pin Description of Intel 8086 – Operating modes of 8086 – Register organization of 8086 – BIU and EU – Interrupts – 8086 based computer system – Addressing Modes of 8086.		15
Unit II	**8086 Instruction Set** – Instruction Groups – Addressing Mode Byte – Segment Register Selection – Segment Override – 8086 Instructions. **Assembly Language Programs for 8086**: Largest Number, Smallest Number in a Data Array – Numbers in Ascending and Descending order – Block Move or Relocation – Block Move using REP instruction – Sum of a series – Multi byte Addition.		15
Unit III	**Intel 386 and 486 Microprocessors**: Intel 386 and 486 Microprocessor – 486DX Architecture – Register Organization of 486 Microprocessor – Memory Organization – Operating Modes of Intel 486 – Virtual Memory – Memory Management Unit – Gates – Interrupts and Exceptions – Addressing Modes of 80486 – Pin Configuration - Input devices – Output devices.		16
Unit IV	**Other Microprocessors :** Pentium – Pentium Pro – Pentium II**,** III, IV - Alpha – Cyrix – MIPS – AMD Processors. **MOTOROLA:** 68000 – 68020 – 68030 – 68040 Processors.		16
Unit V	**Advanced Core Processors:** Dual - Core2 Duo - i3 - i5 - i7 - Quad – Octa - Penta – Comparision. **Interfacing of A/D Converter and Applications**: Introduction – Interfacing of ADC 0808 or ADC 0809 to Intel 8086 – Bipolar to Unipolar Converter – Sample and Hold Circuit, LF 398 – Microprocessor-based Measurement and Control of Physical Quantities.		16
	Total Contact Hrs		**78**
Text Book:	1. Badri Ram. (2007). *Advanced Microprocessors and Interfacing.* Tata McGraw-Hill Publishing Company Limited, Fourteenth reprint. 2. Course Materials from INTERNET (Pentium II, III, IV and Advanced Core Processors).		
Reference Books:	1. A.K. Ray, K.M. Bhurchandi. (2007). *Advanced Microprocessors and Peripherals.* Tata McGraw-Hill Publishing Company Limited, Second Edition. 2. Ramesh S. Gaonkar. (1997). *Microprocessor Architecture, Programming, and Applications with the 8085.* Third Edition. PRI India.		

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K. Vijayakumar				
R. Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT3N1	**Title:** Skill Based Non-Major- I Computer Fundamentals.	**Semester:** III	
Hrs/Week:	1	**Credit:** 2	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of history of Computer, Classification and Model of a computer, I/O devices and Memory.		
Units	**Content**		**Hrs**
Unit I	Generation of Computers.		2
Unit II	Classification of Computers		2
Unit III	Computer Basics: Simple Model of a computer – Characteristics of a computer.		3
Unit IV	I/O devices: - Keyboard, Monitor, Flat Panel Display, Mouse, Printers, Plotters.		3
Unit V	Computer Memory: ROM, Flash Memory		3
	Total Contact Hrs		13
Text Books:	1. V. Rajaraman. (2013). *Fundamentals of computers,* 5th Edition, PHI Learning Private Ltd.		
Reference Books:	1. Pradip Dey, Manas Ghosh. (2008). *Computer fundamentals and programming in C,* Oxford University Press.		

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B.Kalaiselvi				
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Department	Information Technology		
Course	B.Sc.	**Effective from the year:** 2016-2017	
Subject Code: 16UIT3N2	**Title:** Skill Based Non-Major- I Internet Basics.	**Semester:** III	
Hrs/Week:	1	**Credit:**	2
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of Internet, Internet culture, WWW, E-Mail. - Learning various applications of Internet.		
Units	**Content**		**Hrs**
Unit I	**Internet:** Introduction – Definition – History.		3
Unit II	Working principle – Congestion.		3
Unit III	Internet Culture – Business Culture and the Internet.		3
Unit IV	Collaborating Computing and the Internet. **WWW:** Introduction - Miscellaneous Web Browser.		2
Unit V	**Email:** Advantages and Disadvantages – User ID, Password and Email address.		2
	Total Contact Hrs		**13**
Text Books:	1. Raymond Green Law, Ellen Hepp. (2005). *Fundamentals of the Internet and WWW*, 2nd Edition. Tata McGraw Hill.		
Reference Books:	1. S. Padma Priya. (2011). *Web Technology*, Scitech Pub.		

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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT411	**Title:** Computer Networks	**Semester:** IV	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students should have: - Basic concepts of networking like data transmission, topology, OSI model, Transmission medias, X.25 protocol, frame relay, ATM and accessing the internet.		
Units	**Content**		**Hrs**
Unit I	Introduction to Data Communications and Networking – Information Encoding - Analog and Digital Transmission Methods – Modes of Data Transmission and Multiplexing.		12
Unit II	**Transmission Errors**: Detection and Correction - **Transmission Media**: Guided Media, Unguided Media. **Network Topologies**: Mesh, Star, Tree, Ring, Bus topology. Switching- Circuit, Message, Packet switching. Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms – Approaches to Routing.		13
Unit III	Network Protocols and OSI Model - Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN) – Integrated Services Digital Network (ISDN).		13
Unit IV	**X.25 Protocol**: Working principle-Characteristics – Packet format – operations. **Frame Relay:** Need – Working principle – Frame format-congestion & traffic control – FRAD & Features. **Asynchronous Transfer Mode:** Introduction- Packet size- Virtual circuits – Cells- Switching – Layers.		14
Unit V	Internetworking Concepts, Devices, Internet Basics, History and Architecture. **Ways of Accessing the Internet:** Introduction- Dial- up access- Leased lines- DSL- Cable modems.		13
	Total Contact Hrs		**65**
Text Book:	1. Achyut S.Godbole. (2007). *Data Communications and Networks.* Tata McGraw-Hill Publishing Company Limited, Ninth reprint,		
Reference Books:	1. Behrouz A. Forouzan. (2007). *Data Communications and Networking Second Edition Update*. Tata McGraw-Hill Publishing Company Limited, Nineteenth reprint. 2. Andrew S. Tanenbaum. (2000). *Computer Networks.* III Edition, Prentice Hall of India.		

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R.Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT412	**Title:** ADVANCED JAVA PROGRAMMING	**Semester:** IV	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students can Understand various concepts of Swings, Beans, JDBC, Servlets, JSP, JSTL, AJAX etc.		

Units	Content	Hrs
Unit I	**Swing Basic Concepts:** JFC- The Swing and the AWT - Swing Packages - Structure of A Swing Application – Top - Level Swing Containers - Lightweight Swing Container - JComponent Class - Basic Swing Components - Swing Text Components. **Exploring Swing:** Menu Components -Space Saving Lightweight Containers - Advanced Components – Virtual Desktop Components -Advanced Text Component - New Layout Managers.	13
Unit II	**Java Beans**: Definition - Advantages - Application Builder Tools - Using The Bean Development Kit (BDK) - JAR Files - Developing a Simple Bean Using the BDK - Using Bound Properties - Using the Bean info Interface - Constrained Properties - Persistence - Customizers - The Java Bean API - Using Bean Builder.	13
Unit III	**JDBC:** Architecture - JDBC-ODBC Relationship – Types of Drivers – Components - Interfaces and classes - Steps for Querying the Database with JDBC - Creating an ODBC Data source - Querying and updating Database Tables - passing parameters to a statement. **Servlets**: Introduction-Architecture - Designing - Servlet generating Plain Text, HTML - Handling GET Request.	13
Unit IV	**Cookies**: Overview of cookies. **JSP:** Introduction – Scripting elements - life cycle - Implicit objects – EL – Working with HTML forms – Directives – working with Session & Cookies.	12
Unit V	**JSTL Tags**: Overview – EL Support – i18n support - Database Support (SQL Tags) – XML support. **AJAX:** Introduction – working concepts - Benefits - Role of Ajax in enhancing the user experience on the web - Rich internet application - What can Ajax do? - Impact of Ajax on user experience - on mobile - Traditional means of web application development - Web application development - Data exchange - Advantages and disadvantages - Web framework XML HTTP request object - Examples.	14
	Total Contact Hrs	**65**
Text Books:	1. ISRD Group, (2007), *Introduction to Object Oriented Programming through Java*, Tata McGraw-Hill Publishing Company Limited, New Delhi. 2. S. Padma Priya, (2011), *Web Technology*, SCITECH Pub.	
Reference Books:	1. Herbert Schild**,** (2002). *Java Complete Reference*, Fifth Edition, Tata McGraw Hill Pub. 2. Rashim Mogha, V.V. Preetham, (2010), *Java Web Services Programming*, Willy India Pub.	

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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT413	**Title:** C#.Net Programming	**Semester:** IV	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of C#.Net (Data types, Statements, Properties, Inheritance, Polymorphism, Multithreading, and Database Connectivity and Web Services).		
Units	**Content**		**Hrs**
Unit I	**Visual C#.Net:** Introduction **-** Features – Data types and console I/O. C**ontrol Statements (**if, switch, while, do…while, for, for...Each, goto**). Arrays:** One Dimensional, Two Dimensional, Jagged. **Methods:** (value, ref, out, params) – Overloading.		12
Unit II	**Classes and Objects:** Introduction – Definition **-** Data members (constant, Read-only). **Constructors**: Overloading – Copy – Static. **Properties, Indexers and Operator Overloading:** Introduction – Properties – Indexes – Operator overloading – Conversion operators**. Inheritance and Polymorphism:** Introduction – Example – Method Overriding – Accessing Base class Members and Constructors – Virtual methods – Abstract Classes and Abstract Methods – Sealed classes.		13
Unit III	**Interfaces**: Introduction – Definition and usage – Multiple implementations – Inheritance. **Namespaces and Components** – Namespaces – Components – Components and Namespaces – Access modifiers. **Delegates, Events and Attributes**. **Exception handling:** Introduction – Mechanism (Default, User – defined). Backtracking – throw statement – Custom Exception. **Multithreading:** Introduction – Usage – Thread Class and Priority – Synchronization.		14
Unit IV	**I/O Streams:** Introduction – Streams – Binary Data files – Text files – Data files – File and Directory Operations. **Windows applications** - I. **Windows applications-II**. **Database connectivity.**		13
Unit V	**Basic Web controls. Validation and list web controls:** Introduction – validation – list. **User and Custom web controls:** Introduction – User controls – controls and custom properties, controls. **Web services**: Introduction – concepts – creation – Creating a web service that use data source.		13
	Total Contact Hrs		**65**
Text Books:	1. Muthu C. (2008). *Visual C#.Net.* First Reprint. Tata Mc-Graw Hill Pub.		
Reference Books:	1. Kogent learning solutions (2011) *ASP.NET 4.0 in Simple Steps*- -Dream Tech Press Publication. 2. PADMA PRIYA .S (2011) *Web Technology* - Scitech Publications.		

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V.Prabavathi				
K. Vijayakumar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT414	**Title:** Lab. IV - Programming in Advanced Java	**Semester:** IV	
Hrs/Week:	4	**Credit:** 2	
Objectives	On successful completion of this subject the students should have: - Understanding practical experience in various concepts of Swings, Beans, JDBC, Servlets, JSP, JSTL, AJAX, etc...		
Units	**Content**		**Hrs**
	Pre Model: 1. Create a java program using Jcheckbox which provides the functionality of a check box 2. Develop a java program for creating a menu 3. Develop a java program using swing for counting the no. of vowels in the input string. 4. Using Jtabbed pane develop a java program 5. Create a java program to show the function of jtree 6. Develop a program to create jscroll pane using swing **Model:** 7. Develop a java program using Genric Servlet to show Employee detail. 8. Implement JDBC using Servlet. 9. Develop J2EE program to create a web site for maintaining personal information in JSP. 10. Create a Javabean to create Juggler Bean. 11. Generate simple property Javabean.		52
	Total Contact Hrs		**52**

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B.Kalaiselvi				
C. R. Durgadevi				

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2016-2017
Subject Code: 16UIT415	**Title:** Lab. V - Programming in C# .Net	**Semester:** IV
Hrs/Week:	4	**Credit:** 2
Objectives	On successful completion of this subject the students should have: - Understanding Practical Experience in various concepts of C#.Net (Data types, Statements, Properties, Inheritance, Polymorphism, Multithreading, and Database Connectivity and Web Services).	

Units	Content	Hrs
	Sample Program List **Pre Model:** 1. Using Switch Statement Display the employ details. 2. Create method overloading. 3. Create constructor overloading 4. Generate student mark list using inheritance 5. Create User-Defined exception**.** 6. Create an application using button controls (check box, radio). 7. Generate Monthly calendar. **Model:** 8. Create applications using controls (trackbar,panel,treeview) 9. Create applications using controls (splitter, menu dialog boxes). 10. Generating the student details using ADO.Net. 11.Generate employee details and check using ADO.Net 12. Generate basic manipulation using web controls. 13. Check All validation controls using web controls. 14. Creating a simple web service using controls.	52
	Total Contact Hrs	**52**

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V.Prabavathi				
K. Vijayakumar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT4A4	**Title:** CLOUD COMPUTING	**Semester:** IV	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of cloud computing. They learn Types of Cloud services, usage of cloud , Outside the cloud, Blogs and Wikis etc. .		
Units	**Content**		**Hrs**
Unit I	**Understanding Cloud Computing:** Introduction – History – Working - Companies in the Cloud. **Computing in the Cloud:** The Pros and Cons – Benefits – Not using Cloud. **Developing Cloud Services:** Web Based Application – Pros and Cons of Cloud Service – Types – Discovering Cloud Services Development Services and Tools.		13
Unit II	**Cloud Computing for Everyone:** Cloud Computing for the family - Cloud Computing for the community – Collaborating on schedules – collaborating on Group Projects and Events – Cloud Computing for the Corporation. **Using Cloud Services**: Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management.		13
Unit III	**Collaborating on Event Management:** Understanding Event management Applications – Exploring Event management applications. **Collaborating on Contact Management**: Understanding – Exploring. **Collaborating on Project Managemen**t: Understanding – Exploring.		12
Unit IV	Collaborating on Wordprocessing-Spreadsheet-Databases–Presentations Storing and Sharing Files-Sharing Digital photographs.		14
Unit V	**Outside Cloud: Collaborating via Web based communication tools**: Evaluating Web Mail Services – Instant Messaging Services - **Collaborating via social networks and groupware:** Creating groups – Evaluating online Groupware. **Collaborating via Blogs and Wikis**: Evaluating blogs – wikis.		13
	Total Contact Hrs		**65**
Text Book	1. Michael Miller. (2009). *Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online*, Que Publishing.		
Reference Book:	1. Anthony T. Velte and others. (2011). *Cloud Computing.* TATA Mc-Graw Hill Publications, New Delhi.		

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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT4N3	**Title:** Skill Based Non-Major – II. Information Security.	**Semester:** IV	
Hrs/Week:	1	**Credit:** 2	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of network security, cryptography, substitution techniques, encryption, decryption, etc.,		
Units	**Content**		**Hrs**
Unit I	Introduction-The need for security- Security Approaches: Trusted system.		2
Unit II	Security models-Security management practices- Principles of security.		3
Unit III	Cryptography : Concepts and Techniques - Introduction-Plain text and Cipher text		2
Unit IV	Substitution Techniques : Caesar cipher-Mono Alphabetic cipher-Homophonic substitution cipher-Polygram substitution cipher		3
Unit V	Transposition Techniques: Rail fence-Simple Columnar. Encryption and Decryption		3
	Total Contact Hrs		**13**
Text Books:	1. Atul Kahate. (2009). *Cryptography and Network Security*, Second Edition.		
Reference Books:	2. Course materials from Internet.		

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Department	Information Technology		
Course	B.Sc.	**Effective from the year:** 2016-2017	
Subject Code: 16UIT4N4	**Title:** Skill Based Non-Major II - Hardware & Networking	**Semester:** IV	
Hrs/Week:	1	**Credit:**	2
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of processors, input output hardware, various communication channels, networks with their types, etc.,		
Units	**Content**		**Hrs**
Unit I	**Processors:** Microchips, Miniaturization and Mobility - CPU and Main Memory - Microcomputer System Unit.		2
Unit II	**Input and Output Hardware:** Input Hardware - Keyboard Input- Pointing Devices - Output Hardware - Display Screens.		3
Unit III	**Communication Channels:** Electromagnetic Spectrum - Twisted Pair - Coaxial Cable - Fiber Optic Cable – Microwave and Satellite Systems - Wireless Communications - Next Generation Wireless Communications.		4
Unit IV	**Communication Networks:** Types of Networks - Network Operating System - Host and Node - Servers and Clients – Advantages of Networks.		2
Unit V	**Local Networks:** N/W Types - Types of LAN's – Components – Topology - Impact of LAN.		2
	Total Contact Hrs		**13**
Text Books:	1. Williams, Sawyer and Hutchinson. (2001). *Using Information Technology - A Practical Introduction to Computers & Communications*. 3rd Edition. Tata McGraw Hill.		
Reference Books:	1. Course Material from Internet.		

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R. Sekar				
K. Vijayakumar				

Department	Information Technology		
Course	B.Sc.	Effective from the year: 2016-2017	
Subject Code: 16UIT516	Title: Open Source Methodologies	Semester: V	
Hrs/Week:	6	Credit:	4
Objectives	On successful completion of this subject the students should have the knowledge about Unix & Linux Operating System concepts, Administrative, Normal Commands and Android.		

Units	Content	Hrs
Unit I	**Getting Started:** Introduction - Red Hat Linux- Password changes – Documentation - Using Pico to create/edit file - Basic utilities - Special characters. **The GNU/Linux File system:** The Hierarchical file system – Directory and ordinary files - Working with directories – Access permissions – Links.	15
Unit II	**The GNU/Linux File system:** The Hierarchical file system – Directory and ordinary files - Working with directories – Access permissions – Links. **The VIM Editor:** History – Creating and editing a file – features. Command Mode: moving the cursor – Deleting and changing text. Input Mode - Searching and substituting – Miscellaneous commands – yank, put and delete commands – Reading and writing files – Setting parameters – Advanced editing techniques – Units of measure.	17
Unit III	**Programming the Bourne Again Shell:** Control structures – Here document – Expanding null or unset variables – String pattern matching – File name generation – Built-ins – functions. **X Window System and GUI:** Introduction – X Window system – X Applications.	15
Unit IV	**Android:** Introducing Android – Platform – Market – Layers – The Intent of Android Development – Components – Understanding Manifest.XML file – Mapping Applications to processes – Creating an Application. A**ndroid Development Environment:** Introducing SDK – Exploring the development Environment – Building an application in Eclipse – Using the android Emulator.	16
Unit V	**User Interfaces:** Creating the activity – Working with views – Using resources – Exploring Manifest.XML file. **Intents and Services:** Serving up Restaurant Finder with intent. **Storing and Retrieving Data:** Using preferences – File System – Persisting data to a database – Working with Content Provider Classes.	15
	Total Contact Hrs	**78**

Text Book:	1. Mark G. Sobell, (2004), *A Practical Guide to Red Hat Linux 8*, Pearson Education, Edition. 2. W. Frank Ableson, Robi sen (2011), Chris King, **"**Android in Action", Second Edition, Dream Tech Press.
Reference Books:	1. Sumithaba Das, (2006). *Unix Concepts and Applications*, Version 4. 2. Jang, (2003). *Mastering Red Hat Linux Fedora Core 5*, Wiley Pub.

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Department	Information Technology		
Course	B.Sc.	**Effective from the year:** 2016-2017	
Subject Code: 16UIT517	**Title:** MOBILE COMPUTING	**Semester:** V	
Hrs/Week:	6	**Credit:** 5	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of **WAP, GSM, CDMA, 2G, 3G,** etc...		
Units	**Content**		**Hrs**
Unit I	**Introduction**: Mobility of Bits and Bytes –Wireless The Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services - Security in mobile computing – Standards _ Why is it necessary – Standard bodies. **MOBILE COMPUTING ARCHITECTURE**: Architecture for mobile computing – Three-tier architecture – Mobile computing through Internet – Making existing applications mobile enabled		15
Unit II	**MOBILE COMPUTING THROUGH TELEPHONY**: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI. **EMERGING TECHNOLOGIES:** Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card.		16
Unit III	**GSM:** Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency allocations – Authentications and Security. **SMS:** Strengths – Architecture – SM MT – SM MO – VAS through SMS.		16
Unit IV	**GPRS:** GPRS and packet data network – Architecture – Network Operations – Data services – Applications - Limitations – Billing and Charging. **WAP**: WAE – User agent & UAProf – WML – WSP – WTP – WDP – Gateway. **MMS**: Architecture – Transaction Flows.		15
Unit V	**CDMA and 3G**: Spread spectrum technology. **IS 95**: Speech and Channel Coding – Architecture – Channel Structure. CDMA vs. GSM – Wireless Data. **3G:** IMT & CDMA 2000 – Applications on 3G. **WIRELESS LAN:** Advantages – IEEE 802.11 standards - Types – 802.11 Architecture – Mobility – Deploying – Mobile Ad Hoc networks and sensor networks – Security – WiFi vs. 3G		16
	Total Contact Hrs		**78**
Text Books:	1. Asoke K Talukder, Roopa R Yavagal. (2005), *Mobile Computing*, TMH.		
Reference Books:	1. Jochen Schiller, (2008), *Mobile Communication*. Second Edition .Pearson Education. Asia. 2. Christoffer Andersson (2001), *GPRS and 3G Wireless Applications,* John Wiley and Sons pub.		

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K. Vijayakumar				

R. Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT518	**Title:** Major Elective – I Data Mining and Warehousing	**Semester:** V	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of Data mining, KDD, Association rules, Classification, Clustering, different types of mining, etc.,		
Units	**Content**		**Hrs**
Unit I	**Data mining and the data warehouse**: Introduction - Data warehouse – Needs - Designing decision support system - integration with data mining - client server and data warehousing - multi processing machines - cost justification - KDD Process - setting up of KDD Environment - ten golden rules. **Data mining**: Introduction – Motivations.		12
Unit II	**Mining frequent patterns, association and correlations**: Basic concepts - market basket analysis - frequent itemset - closed item set and association rules - frequent pattern mining-Efficient and scalable mining methods - Apriori algorithm-generating association rule from frequent item set - improving efficiency of Apriori - mining frequent itemset without candidate generation – using vertical data format-mining closed frequent itemset.		14
Unit III	**Classification and prediction:** Definition – Issues - classification by Decision tree Induction – Bayesian classification-rule based classification - classification by back propagation - support vector machine.		13
Unit IV	**Cluster analysis:** Definition - types of data in cluster analysis - categorization of major clustering methods - partitioning methods - hierarchical methods - density based methods.		13
Unit V	Spatial data mining - multimedia data mining - text mining - mining the www - data mining Applications.		13
	Total Contact Hrs		**65**
Text Books:	1. Jiawei Han and Micheline Kamber (2005) *Data Mining concepts and techniques,* Elsevier publication.		
Reference Books:	1. Margaret H. Dunham (2009), *Data Mining Introductory and Advanced Topics,* Pearson Education Publications. 2**.** Vikram Pudi, P.Radha Krishna (2009), *Data Mining***,** Oxford University Press, First Edition. 3. Reema Thareja (2009), *Data Warehousing***,** Oxford University Press.		

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V. Prabavathi				
R. Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT518	**Title:** Major Elective – I Embedded Systems	**Semester:** V	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of VLSI circuit, Processor, Memory organization, Device drivers, Programming techniques, RTOS, etc.,		
Units	**Content**		**Hrs**
Unit I	**Introduction to Embedded System**: An Embedded System – Processor in the System – Other Hardware units – Software embedded into a system – Exemplary embedded system – Embedded system on chip and in VLSI circuit.		12
Unit II	**Processor and Memory organization**: Structural units in a processor – Processor selection – Memory devices – Memory selection - Allocation of memory – DMA – Interfacing processor, memories and I/O devices. **Devices and buses for device networks**: I/O devices – Timer and counting devices – Serial communication – Host system		12
Unit III	**Device drivers and Interrupts servicing mechanism**: Device drivers – Parallel port device drivers – Serial port device drivers – Device drivers for IPTD – Interrupt servicing mechanism – Context and the periods for context-switching, dead-line and interrupt latency.		13
Unit IV	**Programming concepts and embedded programming in C and C++**: Software programming in ALP and C – C program elements – Header and source files and processor directives – Macros and functions – Data types – Data structures – Modifiers – Statements – Loops and pointers – Embedded programming in C++ - Java – C program compiler and cross compiler – Source code for engineering tools for embedded C / C++ - Optimization of memory needs		14
Unit V	**Inter - process communication and synchronization of processes, Tasks and threads**: Multiple processor – Problem of sharing data by multiple tasks and routines – Inter process communication. **Real time operating systems**: Operating system services – I/O subsystem – Network operating systems – Real time and embedded operating systems – Interrupt routine in RTOS environment – RTOS task scheduling – Performance metric in scheduling.		14
	Total Contact Hrs		**65**
Text Books:	1. Raj Kamal, (2007) *Embedded Systems – Architecture*, *Programming and Design*, TMH.		
Reference Books:	1. Daniel W. Lewis, (2007) *Fundamentals of Embedded Software*, PHI Education Publications, ISBN, 81-7808-604-2. 2. Peter Marwedel (2006), *Embedded System Design,* New York, Springer Verlag Pub.		

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Department	Information Technology		
Course	B.Sc.,	Effective from the year: 2016-2017	
Subject Code: 16UIT518	Title: Major Elective –I Software Engineering	Semester: V	
Hrs/Week:	5	Credit: 4	
Objectives	On successful completion of this subject the students should have: - Understanding the Software life cycle, Process Models, Various testing techniques and their uses, Requirements analysis, Design concepts, Software quality.		
Units	**Content**		**Hrs**
Unit I	**Software and Software Engineering:** The Nature of software-The Unique Nature of WebApps-Software Engineering-The software process-Software Engineering practice-Software Myths. **Process Models:** A Generic process model-Process Assessment and Improvement-Perspective process model-Specialized process models-The Unified process- Personal and team process models-process Technology-Product and Process. **AGILE Development**: Definition – Agile process - Extreme programming.		14
Unit II	Requirement analysis-Scenario based modeling-UML Models-Data modeling concepts-Class based modeling.**Requirements Modeling:** Flow, Behaviour, Patterns-and WebApps.		12
Unit III	**Design concepts:** The design process-Design concepts-Design model. **User Interface Design:** The golden rule-User Interface Analysis and Design-Interface Analysis-Interface Design Steps-WebApp Interface Design-Design evaluation.		12
Unit IV	**Quality Concepts:** Software Quality-Dilemma-Achieving Software Quality. **Software Testing strategies:** Strategic Approach to Software Testing-Strategic Issues-Unit Testing-Integration Testing-Validation Testing-System Testing.		13
Unit V	**Testing conventional Applications:** Software Testing Fundamentals-Internal and External view of Testing-White Box Testing-Basis Path Testing-Control Structure Testing-Black Box Testing. **Case study:** Develop an application in your own using the above concepts.		14
	Total Contact Hrs		**65**
Text Book:	1. Roger S.Pressman (2010) *Software Engineering-A Practitioner's Approach*, Seventh Edition, McGraw-Hill International Pub.		
Reference Books:	1. Richard Fairley (2010), *Software Engineering Concepts*, 33rd Reprint, Tata McGraw-Hill Publishing Company Limited. 2. Pankaj Jalote (2001), *An Integrated Approach to Software Engineering,* Third Edition Narosa Publication.		

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Department	Information Technology		
Course	B.Sc.	**Effective from the year:** 2016-2017	
Subject Code: 16UIT519	**Title:** Lab. VI – Open Source Methodologies	**Semester:** V	
Hrs/Week:	5	**Credit:** 3	
Objectives	On successful completion of this subject the students should have the practical knowledge about Unix & Linux Operating System commands, Administrative, Normal Commands and Basic Android Applications.		
	Content		**Hrs**
	Sample Program List **Pre Model** **U**sing GNOME, perform the following 1. Change the Desktop Background and mouse pointer theme. 2. Change the Root Password. 3. Add/Remove software. 4. List and view all the files using Icon. 5. Create an Archive file and Extract all Individual files from it. 6. Perform character Mapping. **U**sing Shell perform the following 7. To execute the File manipulation commands 8. To execute the Directory manipulation commands 9. To execute the Utility commands 10.To execute the Pipes & Filter commands 11. To display the Multiplication table. 12. To find the nCr of given numbers. 13. To print the odd & even of given n numbers. 14. To check a given number is an Armstrong or not 15. To calculate the sum of individual digits from a given number. **Model** **U**sing Android SDK perform the following 1. Display the phone dialer with the given number filled in. 2. Doing a Google search using Intent. 3. Sending a text message and showing a picture (using extra attributes). 4. Launch the Music player and play a song stored in SD card. 5. Create a simple android application.		**65**

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K. Vijayakumar				
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Department	Information Technology		
Course	B.Sc.	**Effective from the year:** 2016-2017	
Subject Code: 16UIT520	**Title:** Lab. VII - Software Testing Tools	**Semester:** V	
Hrs/Week:	5	**Credit:** 3	
Objectives	On successful completion of this Lab. students will have the knowledge of Applying the various Programming concepts of software testing like Integration, unit, functional, non-functional testing and about product metrics.		
	Content		**Hrs**
	SAMPLE PROGRAM LIST **Pre Model** 1. Create a payroll system and test the tool. 2. Create a ration shop management system and test the tool. 3. Create airline reservation system and test the tool. 4. Create Library management system and test the tool. 5. Create Banking system and test the tool. **Model** 6. Create Book shop management system and test the tool. 7. Create Electricity billing system and test the tool. 8. Create online cinema ticket reservation system and test the tool. 9. Create Music gallery and test the tool. 10. Create trading system and test the tool.		**65**

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K. Vijayakumar				
C.R. Durgadevi				

Department	Information Technology	
Course	B.Sc.,	Effective from the year: 2016-2017
Subject Code: 16UIT5S1	Title: Skill Based Major Elective Lab – I (Web Programming Lab. PHP).	Semester: V
Hrs/Week:	2	Credit: 2
Objectives	On successful completion of this Lab. (PHP) students should have: - Understanding, Learning and Applying the various Programming concepts of, database concepts, string functions, date and time functions, content navigation, and creating web page. - Improving the Programming skills.	

	Content	Hrs
	SAMPLE PROGRAM LIST **Pre Model** 1. Write a program to print Fibonacci series in PHP. 2. Write a PHP program to store fruit names and prices in a database and display it. 3. Write a program to store the product details in database in PHP. 4. Write a program to create a registration form and store the details in database in PHP. 5. Write a program to search the given book in database using PHP. **Model** 6. Create a simple application using database. 7. Create a Student Details using Database. 8. Create a Employee payroll Details using Database.	**26**

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C.R. Durgadevi				
K. Vijayakumar				

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2016-2017
Subject Code: 16UIT5S2	**Title:** Skill Based Major Elective Lab -I (Web Programming Lab. JSP)	**Semester:** V
Hrs/Week:	2	**Credit:** 2
Objectives	On successful completion of this Lab **(JSP)**. students should have: - Understanding, Learning and Applying the various JSP Programming concepts. - Improving the Programming skills.	

	Content	Hrs
	SAMPLE PROGRAM LIST **Pre Model** 1. Write a JSP program for implicit object. 2. Write a JSP program for performing Arithmetic operations. 3. Write a JSP program to print the current time of the day using scriptlet. 4. Write a JSP program to create a Login form. **Model** 5. Write a JSP program for working with session object. 6. Write a JSP program to create, reading, removing a cookie.	**26**

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V. Prabavathi				
R.Sekar				

Department	Information Technology		
Course	B.Sc.,	Effective from the year: 2016-2017	
Subject Code: 16UIT621	Title: Computer Graphics	Semester: VI	
Hrs/Week:	5	Credit: 4	
Objectives	On successful completion of this subject the students should have :- Writing programming ability on Graphics, clear view on Graphics functions, output devices, 3D and 2D transformations, etc.,		

Unit	Content	Hrs
Unit I	**Overview of Graphics Systems:** Video Display Devices, Refresh Cathode ray tubes, Raster Scan displays, Random Scan Displays, Color CRT monitors, Direct view storage tubes, Flat panel Displays, 3-Dimentional viewing devices, Stereoscopic and Virtual Reality systems, Raster Scan Systems, Random Scan Systems, Input Devices, Graphics software.	13
Unit II	**Output Primitives:** Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms. **Attributes of Output Primitives:** Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.	13
Unit III	**2D Geometric Transformations:** Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. **2D Viewing:** The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions – Clipping Operations – Point, Line: Cohen-Sutherland Line Clipping, Liang- Barsky Line Clipping, Polygon, Curve, Text and Exterior clippings.	12
Unit IV	**3D Concepts**: 3D Display Methods – 3D Graphics Packages. **3D Object Representations**: Polygon Surfaces – Curved lines and Surfaces – Blobby Objects – **3D Geometric Modeling and Transformations**: Translation – Rotation – Scaling – Other Transformations.	13
Unit V	**Visible-Surface Detection Methods:** Classification of Visible-Surface algorithms – Depth-Buffer Method – Scan- Line Method – Depth-Sorting Method – BSP-Tree Method – Area-Subdivision Method – Octree Methods – Ray-casting Methods – Curved surfaces – Wire frame Methods – Visibility-Detection functions. **Illumination Models:** Standard Primaries and the Chromaticity Diagram – Intuitive color Concepts – RGB Color Model – YIQ Color Model – CMY Color Model – HLS Color Model- Color selection ad Applications.	14
	Total Contact Hrs	**65**
Text Books:	1. Donald Hearn, Pauline Baker, (2008). *COMPUTER GRAPHICS.* 2nd edition. PHI, Indian reprint.	
Reference Books:	1. William M. Newman & Robert F. Sproull. (2007). *PRINCIPLES OF INTERACTIVE COMPUTER GRAPHICS.* TMH. 2. Malay K.Pakhira (2008), *COMPUTER GRAPHICS*, *MULTIMEDIA AND ANIMATION*, New Delhi, Prentice Hall of India Pvt. Ltd.	

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K.Vijayakumar				
R. Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT622	**Title:** Major Elective - II Cryptography and Network Security	**Semester:** VI	
Hrs/Week:	6	**Credit:** 5	
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of Security, Symmetric and Asymmetric algorithms, Digital certificates, E-mail, WWW, 2G, 3G etc.		

Units	Content	Hrs
Unit I	**Security:** Introduction – Need – Approaches – Principles – Types of attacks. **Cryptography:** Introduction – Plain text and Cipher text – Substitution & Transposition techniques – Encryption and Decryption – Symmetric and Asymmetric key Cryptography – Steagnography – Key range and Key size - Possible types of attacks.	14
Unit II	**Symmetric Key Algorithms**: Introduction - Algorithm Types and modes – Overview – DES– IDEA– RC4 & 5 – Blowfish – AES.	15
Unit III	**Asymmetric Key Algorithms**: Introduction – History – Overview - RSA algorithm – Symmetric and asymmetric cryptography. **Digital Signatures**: Introduction – Message Digests - MD5 – Secure Hash Algorithm. Knapsack algorithm – Other algorithms.	16
Unit IV	**Digital Certificates:** Introduction – Concepts – Certification Authority – Technical details – Creation – Cross certification – Revocations. **Private key management - PKIX model – PKCS**.	16
Unit V	**Internet Security Protocols:** Introduction – Concepts. **Secure Socket Layer** (SSL): **Transport Layer Security** (TLS) – **Secure Hyper Text Transfer Protocol** (SHTTP) – **Time Stamping Protocol** (TSP). **Secure Electronic Transaction (SET):** Introduction – Participants – Process – Internals. SSL Versus SET – 3-D secure Protocol. **Electronic Money:** Introduction – Security mechanisms – Types. **Email security**: Introduction – Privacy Enhanced Mail – Pretty Good Privacy. WAP Security - Security in GSM – Security in 3G.	17
	Total Contact Hrs	**78**
Text Books:	1. ATUL KAHATE. (2003). *CRYPTOGRAPHY and NETWORK SECURITY*. Second Edition, Tata McGraw-Hill publishing.	
Reference Books:	1. William Stallings.(2006).*Cryptography and Network Security Principles and Practices*. Fourth edition. PHI Education Asia. 2. Behrouz A. Forouzan. (2007). *CRYPTOGRAPY and NETWORK SECURITY*. Tata McGraw Hill Pub.	

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V. Prabavathi				
R. Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT622	**Title :** Major Elective II Digital Image Processing	**Semester:** VI	
Hrs/Week:	6	**Credit:** 5	
Objectives	➢ To understand the concepts of algorithmic designs of Digital Image processing techniques. ➢ To inculcate knowledge in features of MATLAB tool. ➢ To implement image processing concepts in MATLAB.		

Units	Content	Hrs
Unit I	**Introduction:** Digital Image Processing - Background on MATLAB and the Image - Processing Toolbox - The MATLAB Desktop. **Fundamentals :** Digital Image Representation - Reading Images- Displaying Images - Writing Images- Classes - Image Types - Converting between Classes - Array Indexing - Introduction to M-Function Programming	15
Unit II	**Intensity Transformations and Spatial Filtering:** Intensity Transformation Functions - Histogram Processing and Function Plotting - Spatial Filtering - Image Processing Toolbox Standard Spatial Filters. **Image Restoration and Reconstruction:** A Model of the Image Degradation/Restoration Process - Noise Models - Restoration in the Presence of Noise Only—Spatial Filtering - Direct Inverse Filtering - Wiener Filtering	16
Unit III	**Color Image Processing:** Color Image Representation in MATLAB - Converting Between Color Spaces - The Basics of Color Image Processing - Color Transformations - Spatial Filtering of Color Images.	15
Unit IV	**Image Compression:** Background - Coding Redundancy - Spatial Redundancy - Irrelevant Information - JPEG Compression - Video Compression.	16
Unit V	**Morphological Image Processing:** Preliminaries - Dilation and Erosion - Combining Dilation and Erosion - Labeling Connected Components - Morphological Reconstruction - Gray-Scale Morphology. **Image Segmentation:** Point, Line, and Edge Detection - Thresholding - Region-Based Segmentation - Segmentation Using the Watershed Transform	16
	Total Contact Hrs.	78
Text Books:	Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, (2009), *Digital Image Processing using MATLAB*, Second Edition, Gatesmark Pub.	
Reference Books:	1. Nick Efford, (2004), *Digital Image Processing A Practical Introducing Using Java*, 5th Edition, Pearson Education Publications. 2. B. Chanda, D. Dutta Majumder, (2003), *Digital Image Processing and Analysis*, PHI Publications.	

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C.R. Durga Devi				
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Department	Information Technology		
Course	B.Sc.	Effective from the year: 2016-2017	
Subject Code: 16UIT622	Title: Major Elective II Multimedia Techniques	Semester: VI	
Hrs/Week:	6	Credit: 5	
Objectives	On successful completion of this subject the students should have the knowledge about Multimedia concepts, Hardware and Software, types of authoring tools and Multimedia Applications.		

Unit	Content	Hrs
Unit I	**Introduction:** Multimedia Definitions- Elements of Multimedia Systems-Stages of Multimedia project - Multimedia team. **Multimedia hardware and software:** Macintosh and windows production platforms-Connections-Interface-Memory and storage devices- Input Devices - Output Hardware - Communication devices.	15
Unit II	**Basic software Tools:** Text Editing and word processing tools- OCR software - Painting and Drawing Tools- 3D Modeling and Animation Tools-Image editing tools- –Sound Editing Programs-Animation ,Video and Digital Movie tools. **Making Instant Multimedia:** Linking multimedia objects-office suites (Word, Spreadsheets, Databases and Presentation). **Multimedia Authoring Tools:** Types of authoring tools- Card and Page Based Tools-Icon Based authoring tools -Time based authoring tools-Cross Platform authoring notes.	16
Unit III	**Multimedia Building Blocks: Text:** Using text in multimedia- Font editing and design tools- Hypermedia and Hypertext. **Sound:** MIDI Vs Digital audio- Digital audio – Making MIDI Audio- Audio file Formats- -adding sound to your Multimedia Project. **Images:** Making still images: Bitmaps-Vector drawing-3d drawing and rendering-Color-image file formats-Macintosh formats-windows formats and cross Platform formats.	16
Unit IV	**Animation:** Principles of Animation: Animation techniques- animation File formats. **Video:** Using video –How video works- Broadcast video standards- shooting and editing video - recording formats- Digital video: Video compression. **Assembling and Delivering a project:** Planning and costing-Designing and producing-content and talent-Delivering	15
Unit V	**Multimedia Applications:** Multimedia in the real world-multimedia in training and education-multimedia for information and sales (Kiosks) - Multimedia and image processing –multimedia in the office-multimedia in the Home.	16
	Total Contact Hrs	78

Text Books:	1. Tay Vaughan. (2001). *Multimedia Making it work*. Fifth Edition. Tata McGRAW Hill. (Unit I, II, III, IV). 2. Judith Jeffcoate.(2009)*Multimedia in practice(Technology and Applications)*.Pearson Education, 4th Impression, (Unit V)..
Reference Books:	1. Ralf Steinmetz & Klara Nahrstedt. (2009). *Multimedia Computing, Communication & Applications.* Pearson Education-Sixth Impression. 2. John E.Koegel Buford (2002), *Multimedia System*, New Delhi, Pearson Education.

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R.Sekar				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT623	**Title:** Major Elective – III E-Commerce	**Semester:** VI	
Hrs/Week:	6	**Credit:** 5	
Objectives	On successful completion of this subject the students should have knowledge about. E-Business Revenue Models, Law and Taxation, Online payment systems, Online sales		
Units	**Content**		**Hrs**
Unit I	**E-Business Revenue Models:** Introduction – Revenue models – Revenue models in transition – Revenue Strategy Issues – Creating an effective web presence – Website usability – Connecting with customers.		**15**
Unit II	**Selling to consumers online:** Introduction – Web marketing strategies – Communicating with different market segments. **Beyond market segmentation:** Customer Behavior and Relationship intensity-Advertising on the web-E-mail Marketing- Technology Enabled customer Relationship Management-Creating and Maintaining brands on the web-Search Engine positioning and Domain names.		**16**
Unit III	**Selling to Business Online:** Introduction-Purchasing Logistics and support Activities-Electronic Data Interchange (EDI)-Supply chain management using Internet Technologies-Electronic market places and portals.		**15**
Unit IV	**E-Business Law and Taxation:** Introduction-The Legal environment of electronic commerce-Use and protection of Intellectual property in Online Business- Online crime, Terrorism and warfare-Ethical Issues-Taxation and Electronic commerce		**16**
Unit V	**Online payment systems:** Introduction-Online payment basics-Payment cards-Electronic cash-Electronic wallets-Stored value cards-Internet Technologies and the Banking Industry. **Criminal Activity and payment system:** Phishing and Identity Theft.		**16**
	Total Contact Hrs.		**78**
Text Books:	1. Gary P Schneider, (2012), *E-Commerce Strategy, Technology And Implementation*, 9th Edition, Engage Learning Pub.		
Reference Books:	1. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, (2011), *E-commerce Fundamentals and Applications*, 1st Edition, Wiley India Pvt Ltd. 2. P. T. Joseph S. J., (2012), *E - Commerce: An Indian Perspective,* 4th Edition, PHI.		

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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2016-2017	
Subject Code: 16UIT623	**Title :** Major Elective III Artificial Intelligence	**Semester:** VI	
Hrs/Week:	6	**Credit:** 5	
Objectives	On successful completion of this subject the students should have the knowledge about search techniques, reasoning, game playing, expert systems and prolog.		

Units	Content	Hrs
Unit I	**Problems and search:** AI Techniques-Defining the problem as a State Space Search – Production Systems – Problem Characteristics – Production system Characteristics – Heuristic Search Techniques – Generate and test – Hill Climbing – Best-first Search – Problem Reduction – Constraint Satisfaction – Mean-Ends Analysis.	**15**
Unit II	**Knowledge Representation**: Representations and Mappings- Approaches to Knowledge Representation – Issues in knowledge representation – Representing simple Facts in Logic – Representing Instance and Isa Relationships- Procedural versus Declarative Knowledge – Logic Programming – Forward versus Backward reasoning.	**16**
Unit III	**Semantic Nets:** Frames - Conceptual Dependency - Game Playing – Overview – The minimax search procedure – Adding Alpha-Beta cutoffs.	**15**
Unit IV	**Expert System :** Definition – Characteristics of Expert System – Architecture & Description of Modules – Backward Chaining – Knowledge Acquisition facility. Knowledge Engineering – Expert System Life Cycles – Expert System Tools.	**16**
Unit V	**Prolog: The** Introduction-Converting English to prolog facts and rules-goals-Terminology-Variables-Control structures-Arithmetic operators-Matching in prolog-Backtracking-cuts-Recursion-Lists-Dynamic Databases-I/O Streams-Some aspects specific to LPA Prolog.	**16**
	Total Contact Hrs.	**78**
Text Books:	1. Elaine Rich, Kevin Knight, (2009), *Artificial Intelligence*, 3rd edition, Tata McGraw Hill Publications.	
Reference Books:	1. Stuart Russell, Peter Norvig, (2009), *Artificial Intelligence: A Modern Approach,* 3rd Edition, Pearson New International Edition. 2. Er. Rajiv Chopra, (2005), *Artificial Intelligence: A Practical Approach*, 1st Edition, S. Chand Publications.	

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Department	Information Technology		
Course	B.Sc.	**Effective from the year:** 2016-2017	
Subject Code	**Title:** Major Elective III	**Semester:** VI	
16UIT623	Software Project Management		
Hrs/Week:	6	**Credit:** 5	
Objectives	On successful completion of this subject the students should have: Management and project evaluation, Effort estimation, Resource allocation, contract management and software quality.		

Units	Content	Hrs
Unit I	**Introduction to Software Project management:** Introduction –Importance – Meaning of a Project – Software project versus other types of project – Contract Management and technical project management – Activities covered – plans, methods, and methodologies – some ways of categorizing software projects. Stepwise: an overview of project planning. **Programme Management and Project Evaluation:** Programme Management – Managing the Allocation of resources within programmes – strategic programme management – creating a programme – aids to programme management – Benefits Management – Evaluation of Individual projects – technical assessment – cost-benefit analysis - cash flow forecasting – cost-benefit evaluation techniques – risk evaluation.	15
Unit II	**Software Effort Estimation:** Estimation – Problem with over and Under-estimates – basis for software estimating – software effort estimation techniques – Expert judgment – estimating by analogy. **Activity Planning:** The objectives – planning – Project schedules – project and activities – sequencing and scheduling activities – **Network:** Planning models – formulating a network model – adding time dimension – forward pass – backward pass. **Risk Management:** Risk – Categories – Dealing with risk – Risk identification, assessment, planning and management – Evaluating risk to schedule.	16
Unit III	**Resource Allocation:** Introduction - Nature of resources – identifying the resource requirements – scheduling resources – creating critical path – counting the cost – being specific – publishing the resource schedule – cost schedules – scheduling the sequence. **Monitoring and Control:** Creating framework – collecting the data – visualizing progress – cost monitoring – earned value analysis – prioritizing monitoring – getting the project back to target – change control.	16
Unit IV	**Managing Contracts:** ISO 12207 approach – supply process – types of contract – stages in contract placement, management – acceptance. **Managing People and Organizing Terms:** understanding behavior – organizational behavior – selecting the right person for the job – instruction in the best methods – Motivation – Working in groups – becoming a team – decision making – Leadership – organizational structures – dispersed and virtual teams - influence of culture – stress – health and safety.	15
Unit V	**Software Quality:** The place of software quality in project planning – importance of software quality – defining software quality – ISO 9126 - practical software quality measures – product vs process quality management – external standards – techniques to help enhance software quality- quality plans. Small Projects: Introduction – Some problems with student projects – content of a project plan – conclusion.	16
	Total Contact Hrs	**78**

Text Books:	1. Bob Hughes & Mike Cotterell,(2005). *SOFTWARE PROJECT MANAGEMENT*, 4th Edition, PHI Publications.
Reference Books:	1. Pankaj Jalote, (2002), *SOFTWARE PROJECT MANAGEMENT IN PRACTICE*, Pearson Education Asia. 2. Kieron Conway, (2000). *SOFTWARE PROJECT MANAGEMENT FROM CONCEPT TO DEPLOYMENT*, Dream Tech Press.

Compiled by Name	Signature	Verified by HOD Name with Signature	CDC	COE (For office use only)
K. Vijayakumar				
R. Sekar				

Department	Information Technology		
Course	B.Sc.,	Effective from the year: 2016-2017	
Subject Code: 16UIT624	Title: Lab.- VIII Graphics & Multimedia.	Semester: VI	
Hrs/Week:	5	Credit: 3	
Objectives	On successful completion of this subject the students should have programming knowledge about various algorithms of computer graphics using C, new innovations in multimedia by using flash.		

	Content	Hrs
	Sample Program List **Pre Model** 1. Implementation of DDA algorithm for line drawing. 2. Implementation of Bresenham's algorithm for line drawing. 3. Implementation of Mid Point circle algorithm. 4. Implement DDA algorithm to draw a polyline. 5. Implementation of Translation, Scaling, and Rotation transformations. 6. Solar System Animation 7. Butterfly Animation 8. Raining Animation **Model** 1. Implementation of Cohen-Sutherland line clipping algorithm. 2. Implement Bresenham's algorithm to draw parallel lines. 3. Drawing a globe using circle and ellipse algorithm. 4. Creating a Bar Chart. 5. Simulate the bouncing of a ball within four walls. 6. Flag Hoisting Animation 7. Aquarium Animation 8. Own animation	**65**

Compiled by Name	Signature	Verified by HOD Name with Signature	CDC	COE (For office use only)
K. Vijayakumar				
B. Kalaiselvi				

Department	Information Technology		
Course	B.Sc.,	Effective from the year: 2016-2017	
Subject Code 16UIT625	Title: PROJECT	Semester: VI	
Hrs/Week:	5	Credit: 4	
Objectives	To learn depth knowledge about tools used in Software Development, Web Designing & Web Technologies. To understand the usage of front end and back end tools.		
	Content		Hrs
	Using only the following Elective Tools **Front end tools:** 1. VB 2. Java 3. ASP 4. JSP 5. PHP 6. VB.net 7. Javascript 8. C#.NET **Back end tools:** 1. MySQL 2. Oracle 3. MS Access 2007 4. SQL Server 2000 and Above		**65**

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V. Prabavathi				
C.R. Durgadevi				

Department	Information Technology	
Course	B.Sc.,	Effective from the year: 2016-2017
Subject Code: 16UIT6S3	Title: Skill Based Major Elective-II (Web Programming Lab. JavaScript)	Semester: VI
Hrs/Week:	2	Credit: 2
Objectives	On successful completion of this Lab **(JavaScript)**. students should have: - Understanding, Learning and Applying the Java Scripting concepts. - Improving the Programming skills.	

	Content	Hrs
	SAMPLE PROGRAM LIST **Pre Model** 1. Create a java script code block using arrays to generate the current data in words. 2. Create a web page which accept user information and user commands on the web site to check if all the text fields have been entered with data else display an alert. 3. Create a web page using two image files, which switch between one another as the mouse pointer moves over the images. 4. Write a function to convert Fahrenheit to Celsius. **Model** 5. Using Java Script's Window and document objects and their properties and various methods like alert (), evaI(), Parselnt() etc. methods to give the dynamic functionality to HTML web pages. 6. Writing Java Script snippet which make use of Java Script's inbuilt as well as user defined objects like navigator, Date Array, Event, Number etc. 7. Write a program to implement string functions in JavaScript. 8. Write a program to sort a given array in JavaScript.	**26**

Compiled by Name	Signature	Verified by HOD Name with Signature	CDC	COE (For office use only)
B. Kalaiselvi				
R.Sekar				

Department	Information Technology		
Course	B.Sc.	Effective from the year: 2016-2017	
Subject Code: 16UIT6S4	Title: Skill Based Major Elective – II Web Programming Lab. ASP	Semester: VI	
Hrs/Week:	2	Credit: 2	
Objectives	On successful completion of this Lab.(ASP) students should have: - Understanding, Learning and Applying the Programming concepts - Improving the Programming skills.		
	Content		Hrs
	SAMPLE PROGRAM LIST **Pre Model** 1. Write a program to implement a sub function call in ASP. 2. Write a ASP program for handling the string functions 3. Write an ASP program for content navigation in ASP. 4. Write a program to display date and time in ASP. 5. Write a program to create a web page using ASP. **Model** 6. Create a simple application using database. 7. Create a website using ASP.		**26**

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R. Sekar				
V. Prabavathi				