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 2015-2016 BATCH AND ONWARDS)

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

				SEMESTER V						
33		15UIT516	ADVANCED JAVA PROGRAMMING	5	4	3	25	75	100
34		15UIT517	C# . NET PROGRAMMING	6	4	3	25	75	100
35	III	15UIT518	MAJOR ELECTIVE - I	6	5	3	25	75	100
36		15UIT519	LAB. VI - C# . NET PROGRAMMING	5	3	3	40	60	100
37		15UIT520	LAB. VII - ADVANCED JAVA PROGRAMMING	5	3	3	40	60	100
38		15GKL501	GENERAL KNOWLEDGE & GENERAL AWARENESS	SS	2	2		50	50
39	IV	15UIT5S1/S2	SKILL BASED MAJOR ELECTIVE - I	2	2	2		50	50
40		15HEC505	HUMAN EXCELLENCE COURSE - NATIONAL VALUES	1	1	2	25	25	50
		TOTAL		30	24				650
				SEMESTER VI						
41		15UIT621	COMPUTER GRAPHICS	5	4	3	25	75	100
42		15UIT622	MAJOR ELECTIVE - II	6	5	3	25	75	100
43	III	15UIT623	MAJOR ELECTIVE - III	6	5	3	25	75	100
44		15UIT624	LAB. VIII - GRAPHICS & MULTIMEDIA	5	3	3	40	60	100
45		15UIT625	PROJECT	5	4		20	80	100
46	IV	15UIT6S3/S4	SKILL BASED MAJOR ELECTIVE - II	2	2	2		50	50
47		15HEC606	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. Cryptography & Network Security C. Embedded Systems
Elective II	A. Software Project Management B. Mobile Computing C. Digital Image Processing
Elective III	A. Multimedia Techniques B. E-Commerce 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. Linux Programming Lab. B. Web Programming Lab. (ASP)

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT101	**Title:** Programming in C	**Semester:** I	
Hrs/Week:	4	**Credit:** 4	

	On successful completion of this subject the students should have :-
Objectives	- 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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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT102	**Title:** Computer System Architecture	**Semester:** I	
Hrs/Week:	5	**Credit:** 4	
Objectives	On successful completion of this subject the students should have:- - Number systems and binary codes, logic circuits, CPU organization, Input-output organization, 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 - Associative 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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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT1A1	**Title:** Numerical and Statistical Methods	**Semester:** I
Hrs/Week:	4	**Credit:** 5
Objectives	On successful completion of this subject the students should have:- Understanding various concepts of numerical analysis like Algebraic and Transcendental equations, Numeric Differentiation, Interpolation. Learning various applications of statistical methods like correlation and regression for Computer Science.	

Units	Content	Hrs
Unit I	**The Solution of Numerical Algebraic & Transcendental Equations:** Bisection method – Newton - Raphson method - The method of false position. **The Solution of Simultaneous Linear Algebraic Equation**: Gauss Elimination method – Gauss Jordon Elimination method – Gauss Seidal method of iteration – Gauss Jacobi method.	10
Unit II	**Numerical Differentiation:** Newton's Forward Difference formula - Newton's backward difference formula. **Numerical Integration**: Trapezoidal rule - Simpson's One-third rule – Simpson's three-eighths rule.	9
Unit III	**Interpolation**: Newton forward interpolation formula – Newton backward Interpolation formula. **Newton's divided difference method:** LaGrange's formula. **Numerical solution of ordinary differential Equations**: Taylor method (Type I only) – Euler method (Ordinary method only) – Range-Kutta method (Second order only).	11
Unit IV	**Measures of central tendency:** Mean, Median and mode – Relation between mean, median and mode. Dispersion – Range – Quartile Deviation - Mean deviation & standard deviation.	12
Unit V	**Correlation:** Karl Pearson`s Coefficient of Correlation – Rank correlation**. Regression:** Regression Equations - Difference between correlation & Regression.	10
	Total Contact Hrs	**52**
Text Books:	1. Kandasamy. P.Thilagavathi. K. Gunavathi. K**.** (2005). *NUMERICAL METHODS.* Revised Edition: S. Chand & company Ltd. New Delhi (UNIT I, II & III). 2. Pillai R. S. N. Bagavathi V. (2005). *STATISTICAL METHODS***.** Sultan Chand and Sons & Company Ltd. New Delhi. (UNIT IV & V)	
Reference Books:	1. Rajaraman. V. (2008). *Computer Oriented Numerical Methods*. Third edition.PHI Pub. 2. Balagurusamy. E. (2008). *Numerical Methods*. Tata McGraw Hill Pub. 3. Gupta. S.C. Kapoor. V.K. (Reprint 2014). *Fundamental Of Mathematical Statistics*.11th edition. S.Chand and Sons.	

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R.Sekar				

Department	Information Technology	
Course	B.Sc.,	Effective from the year: 2015-2016
Subject Code: 15UIT103	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**

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT204	**Title:** Object Oriented Programming with C++	**Semester:** II
Hrs/Week:	4	**Credit:** 4
Objectives	On successful completion of this subject the students should have Evolution of C++, Functions in C++, key concepts of Object-Oriented Programming, pointers and files.	

Units	Contents	Hrs
Unit I	**Evolution of C++**: Object Oriented Technology-Disadvantages of conventional programming-programming paradigm-key concepts of Object-Oriented Programming – Advantages – Object Oriented Languages –usages of OOP- I/O in C++ - C++ Declarations.	**10**
Unit II	**Functions in C++**: Default Arguments- Inline functions – Function Overloading - principles of function overloading-precautions-Library function. **Classes and Objects**: Classes in C++-Declaring Objects –Public, private, protected- Defining Member Functions –Characteristics of member function-Data hiding or Encapsulation- Static Member variables and functions –static objects- array of objects – friend functions – Overloading member functions – Bit fields and classes.	**10**
Unit III	**Constructor and Destructor**: constructor with Arguments-Overloading constructors-constructor with Default Arguments-copy constructor-Destructor-Calling constructor and destructor-Dynamic Initialization using constructor-Constructor and Destructor with static members. **Operator Overloading**: Overloading unary operators –Operator Return type-Overloading Binary Operators-Overloading with Friend functions –Rules for Overloading.	**10**
Unit IV	**Inheritance:** Types of Inheritance — Virtual base Classes – Abstract Classes-Advantages and Disadvantages of Inheritance. **Pointers:** Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes–new and delete operators – dynamic object **Binding, Polymorphism and Virtual Functions**: Binding in C++ - Virtual functions-Rules-Array of pointers-pure virtual function-Abstract classes-Working of virtual functions-Virtual function in Derived classes.	**12**
Unit V	**Applications with Files:** Introduction-File stream classes-Steps of file operations-checking for Errors-Finding End of a file-File opening modes-File pointers and Manipulators-Manipulators with arguments-Sequential read and write operations-Binary and ASCII Files-Random access operation-Error handling functions. **Exception Handling**: Principles-Keywords-Mechanism.	**10**
	Total Contact Hrs	**52**
Text Books:	1. Ashok. N. Kamthane. (2003). *Object-Oriented Programming with ANSI and Turbo C++*. Pearson Education publication.	
Reference Books:	1. Balagurusamy. E. (1998). *Object-Oriented Programming with C++*. Tata Mc-Graw Hill Publications. 2. Bhushan Trivedi. (2000). *Programming with ANSI C++*. Oxford university Press.	

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R. Sekar				
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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT205	**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. **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.	10
Unit II	**Queues:** Introduction - Queue as an Abstract Data Type - Representation of Queues - Circular Queues - Double Ended Queues - Dequeue - Priority Queues - Application of Queues.	10
Unit III	**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.	10
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.	10
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.	12
	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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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT2A2	**Title:** Mathematical Foundations for Computer Science.	**Semester:** II
Hrs/Week:	4	**Credit:** 5
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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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT206	**Title:** LAB. II - Data Structures Using C++	**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 OOPS, C++ and Data Structures like stack queue, list, sort, search, etc.,. Improving the Programming skills in C++ and Data Structures.	

	Content	Hrs
	SAMPLE PROGRAM LIST **Pre Model** 1. Write a C++ program to implement function overloading. 2. Write a C++ program to sort (Ascending & Descending) the given numbers. 3. Write a C++ program to implement friend function. 4. Write a C++ program to overload constructors. 5. Write a C++ program to perform stack operations using Inline function. 6. Write a C++ program to perform queue operations using functions 7. Write a C++ program to implement binary search. 8. Write a C++ program to implement linear search 9. Write a C++ program to overload unary operator. 10. Write a C++ program to overload binary operator. **Model** 11. Write a C++ program to implement multi level inheritance. 12. Write a C++ program to implement multiple inheritances. 13. Write a C++ program to display the values using virtual function. 14. Write a C++ program to perform file operations. 15. Write a C++ program to implement Linked list using pointers 16. Write a C++ program to implement bubble sort. 17. Write a C++ program to implement quick sort. 18. Write a C++ program to create and process employee details.	**52**

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R. Sekar				
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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT307	**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. - Basic concepts of deadlocks, parallel processing and distributed processing.		

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).	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 - 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 - Virtual Memory Management System.	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 - Issues in Distributed Database Systems - Distributed Mutual Exclusion - Deadlocks in Distributed 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 Book:	1. Achyut s Godbole. (2002). *Operating Systems*, TMH Publications. (1 - 4 units). 2. Andrew S. Tanenbaum. (2009). *Modern Operating Systems,* Pearson Education Publications, 3ʳᵈ Edition.(Unit - 5)	
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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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT308	**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.		12
Unit II	**Oracle9i: 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. Gerald V. Post.(2005). *Database Management Systems*, 3rd edition, TMH.		

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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT309	**Title:** Modern System Analysis and Design	**Semester:** III	
Hrs/Week:	6	**Credit:** 4	
Objectives	On successful completion of this subject the students should have S/W Development, Various Approaches and Methodologies, Process Models, Forms & Reports, Implementation, Maintenance and CASE Tools.		
Units	**Content**		**Hrs**
Unit I	**System:** Definition – characteristics – concepts. System Analysis & skills. **Types of Information Systems:** TPS – MIS – DSS - System Development Life Cycle (SDLC). The heart of the system development process-The origin of software.		16
Unit II	**Assessing the Project Feasibility:** Feasibility factors, Economic – technical & other feasibility concerns. **Baseline Project Plan Report (BPP). System Analysis (Requirements Determination) Traditional Methods:** Interviews – Questionnaires – Observations – Document Analysis. **Modern Methods:** JAD – Prototype. **Radical Methods:** Identifying processes to reengineer – Disruptive technologies.		16
Unit III	**Process Modeling:** DFD mechanics – four types of DFDs – DFD in system analysis-**Structuring system logic Requirements- Logic Design:** Physical file & database design – Field design – Table design. **Structuring system Data Requirements:** Introduction to E-R Modeling-Conceptual Data modeling and the E-R model.		15
Unit IV	**Forms & Reports:** Designing – Formatting – assessing usability. **Interfaces & Dialogues:** Process – Designing interfaces – Designing dialogues – Interaction methods & devices. **Designing Internals:** Transaction centered & Transform centered design – Transform analysis – Transaction analysis – Five types of coupling – Seven types of cohesion.		15
Unit V	**Implementation & Maintenance:** Six major activities. **S/W Application testing:** Types – Walkthrough – process. **Installation:** Four types – planning. **Documenting the system:** Training& supporting users. **Maintenance:** Process – conducting systems maintenance. **Automated tools :** CASE – Objectives of CASE – Use of CASE in organizations – Components of CASE – Visual and Emerging Development tools		16
	Total Contact Hrs		**78**
Text Book:	1. Jeffrey A.Hoffer, Joey F.George, Joseph S.Valacich, (2000). *Modern Systems Analysis and Design*. IInd Edition. Vth Edition. Pearson Education Pub's. 2. Jeffrey A.Hoffer, Joey F.George, Joseph S.Valacich, (2009). *Modern Systems Analysis and Design*. IInd Edition. Vth Edition. Pearson Education Pub's.		
Reference Books:	1. Richard Fairley. (2001).*Software Engineering Concepts*. Tata McGraw Hill Publications. 2. Rajib Mall, (2010). *Fundamentals of Software Engineering*. Third Edition. Prentice Hall of India.		

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R.Sekar				
C.R. Durgadevi				

Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT3A3	**Title: ALLIED – 3** Microprocessor & Assembly Language Programming.	**Semester:** III	
Hrs/Week:	5	**Credit: 5**	
Objectives	On successful completion of this subject the students should have: - Understood the Evolution of microprocessor, Addressing modes and PIN diagrams of various processors, Assembly Language Programs, Other Microprocessors, 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.		13
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.		12
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.		13
Unit IV	**Other Microprocessors :** Pentium – Pentium Pro – Pentium II, III, IV - Alpha – Cyrix – MIPS – AMD Processors. **MOTOROLA:** 68000 – 68020 – 68030 – 68040 Processors.		14
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.		13
	Total Contact Hrs		**65**
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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R. Sekar				

Department	**Information Technology**	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT310	**Title:** Lab. III - RDBMS & Visual Programming	**Semester:** III
Hrs/Week:	6	**Credit:** 2
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 VB .NET	

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 4. Create window application using text box, Rich text box in VB.NET. 5. Create an application using button controls (check, radio, Panel) in VB.NET. 6. Create an application using List boxes, Checked List boxes, Combo boxes and picture boxes) in VB.NET.	**78**

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. Develop a Simple Project for Student Database Management System using ADO.NET.

3. Design a form using common dialog control to display the font, save and open dialog box without using the action control property.

4. Write a simple program to prepare a Questionnaire.

5. Write a VB.NET Program to develop a menu driven program Add a MDI window in the form and arrange them in the cascading/horizontal style using menus (Create a menu to add form, arrange) (Menu Item 1). Also change the form color using the menu in another menu item (Menu Item 2).

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R. Sekar				

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT3N1	**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, ASCII format, Binary operations, Memory, Memory types and secondary storage devices.	

Units	Content	Hrs
Unit I	History of Computers – Computer Languages – Types of Computers.	3
Unit II	Components of a Computer – ASCII Format – Bits - Bytes Format – Number System.	4
Unit III	Binary Operations – Number Conversion.	3
Unit IV	Memory – Types of Computer Memory.	2
Unit V	Secondary Storage Devices.	1
	Total Contact Hrs	13
Text Books:	1. Pradip Dey, Manas Ghosh. (2008). *Computer fundamentals and programming in C,* Oxford University Press.	
Reference Books:	1. M. Morris Mano. (2008). *Computer System Architecture,* Third Edition.	

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V. Prabavathi				

Department	Information Technology	
Course	B.Sc.	**Effective from the year:** 2015-2016
Subject Code: 15UIT3N2	**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:** 2015-2016
Subject Code: 15UIT411	**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 Protoco**l: 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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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2018
Subject Code: 15UIT412	**Title:** Java Programming	**Semester:** IV
Hrs/Week:	5	**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 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.	12
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.	12
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.	12
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.	14
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.	15
	Total Contact Hrs	65
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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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT413	**Title:** Software Engineering	**Semester:** IV	
Hrs/Week:	5	**Credit:** 4	

Objectives	On successful completion of this subject the students should have: - Understanding the Software life cycle, Various testing techniques and their uses, Requirements analysis, Design concepts, Software quality assurance.	
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.	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 Quality Assurance:** Elements of Software Quality Assurance-SQA Tasks, Goals and Metrics-Formal Approaches to SQA-Statistical software quality assurance-Software Reliability.	13
Unit V	**Software Testing strategies:** Strategic Approach to Software Testing-Strategic Issues-Unit Testing-Integration Testing-Validation Testing-System Testing. **Testing conventional Applications:** Software Testing Fundamentals-Internal and External view of Testing-White Box Testing-Basis Path Testing-Control Structure Testing-Black Box Testing.	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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R. Sekar				

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT4A4	**Title:** GRID AND CLOUD COMPUTING	**Semester:** IV
Hrs/Week:	5	**Credit:** 5
Objectives	On successful completion of this subject the students should have: - Understanding various concepts of grid and cloud computing. They learn the grid anatomy, OGSA, OGSI, Cloud Types of services, usage of cloud computing.	

Units	Content	Hrs
Unit I	**Grid Computing:** Introduction to Grid Computing - The Grid Computing Anatomy - The Grid Computing Road map. **Merging the Grid Services Architecture with the Web Services Architecture.**	13
Unit II	**Open Grid Services Architecture (OGSA):** Sample Use Cases that drive the OGSA – The OGSA Platform Components – Open Grid Services Infrastructure (OGSI) – OGSA Basic Services.	13
Unit III	**Introduction to Cloud Computing:** History of Cloud Computing –How Cloud Computing works-Companies in the Cloud Computing Today. **Computing in the Cloud:** The Pros and Cons of Cloud Computing-Benefits of Cloud Computing. **Developing Cloud Services:** Web Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2- Google App Engine – IBM Clouds.	13
Unit IV	**Cloud Computing for Everyone:** Centralizing Email communications – collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud computing for the Community – 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 V	**Using Cloud Services**: Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Databases – Storing and Sharing Files. **Outside Cloud:** Other ways to Collaborate Online-Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating via Blogs and Wikis.	13
	65	65
Text Books:	1. Joshy Joseph & Criag Fellenstein. (2009). *Grid Computing*, PHI, PTR. 2. Michael Miller. (2009). *Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online*, Que Publishing.	
Reference Books:	1. Jose C.Cunha, Omer F.Rana (Eds). (2006). *Grid Computing*, Springer International Edition. 2. Anthony T. Velte and others. (2011). *Cloud Computing*. TATA Mc-Graw Hill Publications, New Delhi.	

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C.R.DURGA DEVI				
V. PRABAVATHI				

Department	Information Technology	
Course	B.Sc.	Effective from the year: 2015-2016
Subject Code: 15UIT414	Title: Lab. IV - Java Programming	Semester: IV
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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Department	**Information Technology**	
Course	B.Sc.	**Effective from the year:** 2015-2016
Subject Code: 15UIT415	**Title:** Lab. V - Software Testing Tools	**Semester:** IV
Hrs/Week:	4	**Credit:** 2
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.	52

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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code:	**Title:** Skill Based Non-Major II - Information Security.	**Semester:** IV
15UIT4N3		
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	2
Unit II	Attacks on Computer and Security - Security Approaches	4
Unit III	Cryptography : Concepts and Techniques - Introduction-Plain text and Cipher text	3
Unit IV	Substitution Techniques - Transposition Techniques	2
Unit V	Encryption and Decryption	2
	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:** 2015-2016
Subject Code: 15UIT4N4	**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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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT516	**Title:** ADVANCED JAVA PROGRAMMING	**Semester:** V
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 - Handing 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:** 2015-2016	
Subject Code: 15UIT517	**Title:** C#.Net Programming	**Semester:** V	
Hrs/Week:	6	**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).
	    - Understanding various concepts of Vb.Net (Operators, Loops, Statements, Check Boxes, Radio Buttons, Menus, and Tool Bars).

Units	Content	Hrs
Unit I	**Visual C#.Net:** Introduction - Features – Data types and console I/O. **Control Statements (**if, switch, while, do…while, for, for...Each, goto**). Arrays:** One Dimensional, Two Dimensional, Jagged. **Methods:** (value, ref, out, params) – Overloading.	15
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.	16
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.	17
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.**	15
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.	15
	Total Contact Hrs	78

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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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT518	**Title:** Major Elective - I Cryptography and Network Security	**Semester:** V
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). *CRYPTOGRAPY 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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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT518	**Title:** Major Elective – I Data Mining and Warehousing	**Semester:** V	
Hrs/Week:	6	**Credit:** 5	
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.		14
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.		15
Unit III	**Classification and prediction:** Definition – Issues - classification by Decision tree Induction – Bayesian classification-rule based classification - classification by back propagation - support vector machine.		16
Unit IV	**Cluster analysis:** Definition - types of data in cluster analysis - categorization of major clustering methods - partitioning methods - hierarchical methods - density based methods.		16
Unit V	Spatial data mining - multimedia data mining - text mining - mining the www - data mining Applications.		17
	Total Contact Hrs		**78**
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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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT518	**Title:** Major Elective – I Embedded Systems	**Semester:** V	
Hrs/Week:	6	**Credit:** 5	
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.		14
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		15
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.		16
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		16
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.		17
	Total Contact Hrs		**78**
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:** 2015-2016	
Subject Code: 15UIT519	**Title:** Lab. VI - C# .Net Programming	**Semester:** V	
Hrs/Week:	5	**Credit:** 2	
Objectives	On successful completion of this subject the students should have: - Understanding Practical Experience in various concepts of C#.Net and VB.Net programs like polymorphism, Inheritance, Loops, Controls and etc..,		
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.		65
	Total Contact Hrs		65

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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT520	**Title:** Lab. VII - Advanced Java Programming	**Semester:** V
Hrs/Week:	5	**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.	65
	Total Contact Hrs	65

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Department	Information Technology	
Course	B.Sc.,	Effective from the year: 2015-2016
Subject Code: 15UIT5S1	Title: Skill Based Major Elective – 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.	26

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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT5S2	**Title:** Skill Based Major Elective-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 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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Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT621	**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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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT622	**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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Department	Information Technology		
Course	B.Sc.	**Effective from the year:** 2015-2016	
Subject Code: 15UIT622	**Title:** Major Elective II MOBILE COMPUTING	**Semester:** VI	
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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Department	Information Technology		
Course	B.Sc.	**Effective from the year:** 2015-2016	
Subject Code	**Title:** Major Elective II	**Semester:** VI	
15UIT622	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.	

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Department	Information Technology		
Course	B.Sc.,	**Effective from the year:** 2015-2016	
Subject Code: 15UIT623	**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:** 2015-2016	
Subject Code: 15UIT623	**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:** 2015-2016	
Subject Code: 15UIT623	**Title:** Major Elective III 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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V. Prabavathi				
R.Sekar				

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code: 15UIT624	**Title:** Lab.- VIII Graphics & Multimedia.	**Semester: VI**
Hrs/Week:	5	**Credit:** 2
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. Implementation of Translation, Scaling, and Rotation transformations.	
	5. Solar System Animation	
	6. Butterfly Animation	
	7. Raining Animation	
	8. To execute the File manipulation commands	
	9. To execute the Directory manipulation commands	
	10. To execute the Utility commands	
	11. To execute the Pipes & Filter commands	
	12. To display the Multiplication table	65
	Model	
	1. Implementation of Cohen-Sutherland line clipping algorithm.	
	2. Drawing a globe using circle and ellipse algorithm.	
	3. Creating a Bar Chart.	
	4. Simulate the bouncing of a ball within four walls.	
	5. Flag Hoisting Animation	
	6. Aquarium Animation	
	7. Own animation	
	8. To find the nCr of given numbers.	
	9. To print the odd & even of given n numbers.	
	10. To check a given number is an Armstrong or not	
	11. To calculate the sum of individual digits from a given number.	

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K. Vijayakumar				
C.R. Durgadevi				

Department	Information Technology	
Course	B.Sc.,	**Effective from the year:** 2015-2016
Subject Code 15UIT625	**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. XML 4. DHTML 5. ASP 6. JSP 7. PHP 8. VB.net 9. ASP.net 10. C#.NET **Back end tools:** 1. MySQL 2. Oracle 3. MS Access 2007 4. SQL Server 2000 and Above	65

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Name	**Signature**			
V. Prabavathi				
C.R. Durgadevi				