VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN
[AUTONOMOUS]

B.Sc., (INFORMATION TECHNOLOGY)

(Candidates admitted from 2014-2015 onwards)

REGULATIONS
I. SCOPE OF THE PROGRAMME

Bachelor of Information Technology can be considered to be one of the most prominent UG level programs in our country. This program mainly deals with the development of computer applications for the purpose of updating computer programming languages. B.Sc.[IT] also aims at creating strong knowledge of theoretical Information Technology subjects who can be employed in software development and testing units of industries. The course has a time period of 3 years with 6 semesters.

II. SALIENT FEATURES

- Regular conduct of guest lectures and seminars
- Campus recruitment
- Provides facilities such as Internet Access and In-House Library
- Provides Career Guidance for Post Graduate Courses like M.Sc, and the Certifications in programming languages
- Conduct of Personality Development Program
- Visiting Faculties from Industries

III. OBJECTIVES OF THE COURSE

The Course Objective of the B.Sc. Information Technology program is to provide advanced and in-depth knowledge of Information Technology and its applications to enable students pursue a professional career in Information and Communication Technology in related industry, business and research. The course designed to impact professional knowledge and practical skills to the students.

IV. ELIGIBILITY FOR ADMISSION

A Candidates seeking admission to the first year Degree course (**B.Sc. INFORMATION TECHNOLOGY**) shall be required to have passed Higher Secondary

Examination with Mathematics or Business Mathematics or Computer Technology or Statistics (Academic Stream or Vocational Stream) as one of the subject under Higher Secondary Board of Examination, conducted by the Government of Tamilnadu or an examination accepted as equivalent thereto by the syndicate, subject to such conditions as may be prescribed thereto are permitted to appear and qualify for the **B.Sc. Information Technology** Degree Examination of Periyar University after a course of study of three academic years.

V. DURATION OF THE PROGRAMME

➢ The course shall extend over a period of three academic years consisting of six semesters. Each academic year will be divided into two semesters. The First semester will consist of the period from July to November and the Second semester from December to April.

➢ The subjects of the study shall be in accordance with the syllabus prescribed from time to time by the Board of Studies of Vivekanandha College of Arts and Sciences for Women with the approval of Periyar University.

VI. CONTINUOUS INTERNAL ASSESSMENT (CIA)

The performance of the students will be assessed continuously and the

Internal Assessment Marks for Theory papers

1. Average of two Tests - 10 Marks

2. Seminar   -   5 Marks

3. Assignment   -   5 Marks

4. Attendance   -   5 Marks

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Total   = 25 Marks

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Internal Assessment Marks for Practical

1. Attendance   - 10 Marks

2. Observation   - 10 Marks

3. Test   - 20 Marks

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Total   =40 Marks

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PASSING MINIMUM (Theory)

EXTERNAL

In the University Examinations, the passing minimum shall be 40 % out of 75 Marks.
(30 Marks)

PASSING MINIMUM (Practical / Mini project)

EXTERNAL

In the University Examinations, the passing minimum shall be 40 % out of 60 Marks.
(24 Marks)

Distribution of Marks

Problem Understanding	: 05 Marks
Program writing	: 10 Marks
Debugging	: 10 Marks
For Correct Results	: 05 Marks

The Passing minimum shall be 40% out of 60 marks (24 Marks)

VII. ELIGIBILITY FOR EXAMINATION

Distribution of marks for attendance

PERCENTAGE	MARKS	
	THEORY	PRACTICAL
75-80	1	2
81-85	2	4
86-90	3	6
91-95	4	8
96-100	5	10

A candidate will be permitted to appear for the University Examination only   on earning
75 % of attendance and only when her conduct has been satisfactory. It shall be opened to
grant exemption to a candidate for valid reasons subject to conditions prescribed.

VIII. CLASSIFICATION OF SUCCESSFUL CANDIDATES

Successful candidates passing the examination of Core Courses (main and allied subjects) and securing marks

a) 75 % and above shall be declared to have passed the examination in first class with Distinction provided they pass all the examinations prescribed for the course at first appearance itself.

b) 60% and above but below 75 % shall be declared to have passed the examinations in first class without Distinction.

c) 50%and above but below 60% shall be declared to have passed the examinations in second class.

d) All the remaining successful candidates shall be declared to have passed the examinations in third class.

e) Candidates who pass all the examinations prescribed for the course at the first appearance itself and within a period of three consecutive academic years from the year of admission only will be eligible for University rank.

IX. ELIGIBILITY FOR AWARD OF THE DEGREE

A candidate shall be eligible for the award of the degree only if she has undergone the above degree for a period of not less than three academic years comprising of six semesters and passed the examinations prescribed and fulfilled such conditions have been prescribed therefore.

X. PROCEDURE IN THE EVENT OF FAILURE

If a candidate fails in a particular subject, she may reappear for the semester examination in the concerned subject in subsequent semesters and shall pass the examination.

XI. COMMENCEMENT OF THESE REGULATIONS

These regulations shall take effect from the academic year 2014-15 (i.e.,) for the students who are to be admitted to the first year of the course during the academic year 2014-15 and thereafter.

EVALUATION OF EXTERNAL EXAMINATIONS (EE)
QUESTION PAPER PATTERN – Theory

Time Duration: 3 Hours   Max. Marks: 75

PART- A: 10x2 = 20
Answer all the Questions

Two Questions from each unit

PART- B: 5x5 = 25
Answer all the Questions

One Question from each unit (either or type)

PART- C: 3x10 = 30
Answer Any Three Questions

One Question from each unit (3 Out of 5)

The Passing minimum shall be 40% out of 75 marks (30 marks)

QUESTION PAPER PATTERN – Practical

Time duration: 3 Hours   Max. Marks : 60

1. One compulsory question from the given list of objectives   : 30 Marks
2. One Either/OR type question from the given list of objectives : 30 Marks

The Passing minimum shall be 40% out of 60 marks (24 marks)

2014-2015 Onwards	DIGITAL COMPUTER FUNDAMENTALS AND C PROGRAMMING (12U4ITC01)	B.Sc. Information Technology
I Semester		Core: Theory
Hours: 60		Credit : 5

UNIT – I   **Hours: 12**

Introduction to computers: Introduction – Characteristics – Generation of computers – Classification of digital computer system – Functions & Components of computer system – Memory units - Input devices: Keyboard - mouse - OCR – OMR – Touch screen. Output Devices: Monitor – Printer: Dot matrix, laser printer. Auxiliary storage devices: Magnetic tape - Floppy disk – CD Disks/Drives.

UNIT – II   **Hours: 10**

Number System : Decimal – Binary – Octal –Hexadecimal number system – Conversion – Binary Addition – Binary Subtraction – Complements – BCD – ASCII Code – EBCDIC Code. Boolean Algebra & Gate network: AND – OR Gates – Inverters – NAND – NOR Gates – Basic laws of Boolean algebra – Demorgan's Theorem.

UNIT – III   **Hours: 12**

Overview of C: Introduction – Basic structure of C programs – Character set – C Tokens – Keywords & Identifiers – Constant – Variables – Data types – Assigning values to variables – Defining symbolic constant – Operators & expressions – Type conversions in expressions – Managing Input & Output Operations.

UNIT – IV   **Hours: 13**

Decision Making & Branching Statements: IF – IF-else – Nesting of IF-else – Switch – GOTO Statement. Looping Statement: While – Do..While statement – For statement. Arrays: Definition & Declaration – Types of arrays – Declaring & Initialing string variables – String handling functions. User defined function: Introduction – Definition of function – Function calls – Function declarations & Return types – Recursion.

UNIT – V   **Hours: 14**

Structures & Unions: Defining a structure – Declaring structure variables – Accessing structure members – structure Initialization. Unions. Pointers: Introduction – Understanding pointers – Accessing the address of a variable – Initializing of pointer variables. File Management: Introduction - Defining & Opening a file – Closing a file – Input / Output Operation on files.

Text Books
1. "Fundamentals of Information Technology & Communication Engineering". "Alexis Leon, Mathew's Leon, Vikas Publishing house, New Delhi,1998(Unit I: Chapters -2,3,4,6,7,8,9&10)
2. "Digital Computer Fundamentals" Thomas C Bartee, 6th Edition. T.M.H Publisher, New Delhi, 1991 (Unit II:Chapters2&3)
3. "Programming in ANSI C , E. Balagurusamy Tata MC Graw hill, New Delhi, 4th Edition. (Unit III: Chapters 1,2,3&4 Unit-IV: Chapters 5,6,7,8 &9 Unit-V:10,12&12)

2014-2015 Onwards	PROGRAMMING IN C LAB	B.Sc. Information Technology
I Semester	(14U1ITCP01)	Core: Practical – I
Hours: 50		Credit : 3

1. Program to find the Factorial of N Numbers.

2. Program to find the Fibonacci series of N numbers.

3. Program to find the solution for the Quadratic Equation (All Cases)

4. Program to Sort and find the largest and smallest of the given array of numbers.

5. Program to implement Matrix Manipulation.

6. Program to check whether the given string is Palindrome or not.

7. Program to implement string handling functions.

8. Program to find the number of characters, words and lines in a given string.

9. Sorting the given names in ascending and descending order.

10. Program to Swap two numbers using functions and Pointers.

12. Program to prepare Student Mark list using structure.

12. Program to prepare Pay Bill using files.

2014-2015 Onwards	PROGRAMMING IN C++ (14U2ITC02)	B.Sc. Information Technology
II Semester		Core: Theory
Hours: 60		Credit : 5

Total Hours: 50

Objectives:

To learn the basic concepts of object oriented programming & the syntax of C++ language. To impart the programming skills C++ and the concepts of OO Software Development Life Cycle and about Unified Modeling Language.

UNIT I   **Hours: 9**

Basic Concepts of OOP – Benefits of OOP – Applications of OOP -Structure of C++ - Applications of C++ -Tokens- Keywords- Identifiers and Constant-Data types - Variables – Operators-Manipulators-Expressions- Control Structures. Functions – Prototype- Call by Reference- Return by reference- Inline Functions- Default Arguments- const Arguments- Function Overloading- Friend and Virtual Function.

UNIT - II   **Hours: 10**

Classes and Objects – Class – Member Functions-Array with in a class- Memory Allocation for Objects- Static data members – Static member function- Array of Objects-Objects as Function Arguments – Friendly Functions-Returning Objects-const Member Functions- Pointers to Members, Constructors and Destructors. Operator Overloading and type conversions.

UNIT III   **Hours:12**

Inheritance: Extending classes- Derived Classes- single inheritance- Multilevel Inheritance- Multiple Inheritance- Hierarchical Inheritance- Hybrid Inheritance- Virtual Base Classes- Abstract Classes, Pointers, virtual Functions and Polymorphism: Pointers – Pointers to Objects – these Pointers Virtual Functions – Pure Virtual Functions. Managing I/O Operations: Streams in C++ - C++ Stream Classes – Formatted and Unformatted I/O Operations Managing Output with Manipulators.

UNIT IV   **Hours:11**

Working with Files: Classes for file Stream Operations- Opening and closing a File – Detecting end-of-file- File Pointers and their Manipulators – sequential I/O Operations-Updating a file- Error Handling during File Operations- Command Line Arguments-Templates: Class templates- Class templates with Multiple Parameters- Function templates-Function Templates with Multiple Parameters- overloading of Templates Functions- Member Function Templates- Non- type template arguments, Exception Handling: Basics- Exception Handling Mechanism- throwing Mechanism- Catching Mechanism- Rethrowing an Exception – Specifying Exceptions.

UNIT V   **Hours:8**

Object - Oriented System Development Life Cycle. : Introduction – The software development process – Building High – Quality software – Object – Oriented System Development – Reusability. Unified Modeling Language: Introduction – Static and Dynamic models – UML Diagrams – UML class Diagram – Use – case Diagram – UML dynamic modeling – UML Extensibility – UML Meta Model.

Text Books

1. E.Balagurusamy, "Object-Oriented Programming with C++", Tata McGraw Hill Publishing Company Limited, New Delhi ,Second Edition, 2001.
   UNIT-I(CHAPTER-1,2,3,4),UNIT-II(CHAPTER-5,6,7),UNIT-III(CHAPTER-8,9,10),
   UNIT-IV(CHAPTER-11,12,13).

2. Bahrami "Object Oriented Systems", McGraw Hill International Edition,1999.
    UNIT-V(CHAPTER 3,5)

Reference Books

1. Robert Lafore, " Object Oriented Programming in Turbo C++", Galgotia ,2001.

2. Herbert Schildt, "Teach Yourself C++", Third Edition. Tata McGraw Hill, 5th Reprint, 2000

3. K.R Venu Gopal , Rajkumar, T.Ravishankar, "Mastering C++",Tata McGraw Hill Publishing Company Ltd, New Delhi

2014-2015 Onwards	PROGRAMMING IN C++ LAB (14U2ITCP02)	B.Sc. Information Technology
II Semester		Core: Practical – II
Hours: 50		Credit : 3

Objectives:

To have practical understanding in programming in C++

Practical List:

1. Programs using Classes and Objects.

2. Constructors & Destructors.

3. Array of objects, Passing objects as Function arguments.

4. Inline Functions

5. Function overloading

6. Operator overloading

7. Inheritance (All Types)

8. Dynamic Polymorphism – Virtual Functions.

9. Formatted I/O and File Operation.

10. Templates

11. Exception Handling

12. Friend Function

Subject Title	Data Structures And Algorithms	Semester	III
Subject Code	14U3ITC03	Specialization	NA
Type	Core	L:T:P:C	6 : 0 : 0 : 3

Objectives

1. To understand the basic concept of data structures and its usage in memory management and to learn about designing algorithms.

Unit	Syllabus Contents	Number of Sessions
I	Introduction and Overview: Definitions – Concept of Data Structures – Overview of Data Structures – Implementation of Data Structures. Arrays: Definition – Terminology – One Dimensional Array – Multidimensional Array – Applications.	10
II	Linked List: Definition – Single Linked List – Representation – Operations – Double Linked List – Operations. Stacks: Introduction – Definition – Representation of stacks – Operations on Stacks – Applications of Stack: Evaluation of Arithmetic Expression. Queues: Introduction -Definition-Representation of Queues – Applications of Queues: CPU Scheduling in a Multiprogramming Environment – Round Robin Algorithm.	13
III	Trees: Basic Terminologies-Definition and Concepts – Representation of Binary tree – Operations on Binary Tree: insertion – Deletion – Tree Traversals – Types of Binary Trees: Expression tree – Binary Search Tree – Heap Trees.	12
IV	Sorting: Basic Terminologies- Sorting Techniques- Sorting by Selection: Heap Sort-Sorting by Exchange: Bubble Sort - Quick Sort- Shell Sort-Sorting by Distribution: Radix Sort- Sorting by Merge: Merge Sort.	13
V	Graphs-Introduction-Graph Terminologies-Representation of Graphs-Operations on Linked List Representation of Graphs-Applications: Shortest Path Problem.	12

Learning Resources	
Text Books	1. Debasis Samanta "Classical Data structure" 2nd Edition, PHI Learning Private Limited, New Delhi, 2011.(UNIT I-V)
Reference Books	1. M. A. Weiss, "Data Structures and Algorithm Analysis in C", 2nd edition, Pearson Education Asia, 2009. 2. Alfred V. Aho, Murray Hill, John E. Hopcroft, Jeffrey D. Ullman, " Data Structures and Algorithms".3 rd Edition, Pearson Education,2008.
Web Sites / Links	1. www.freetech**books**.com/**algorithms**-and-**data-structures**-f11.html

Subject Title	Computer Networks	Semester	III
Subject Code	14U3ITC04	Specialization	NA
Type	Core	L:T:P:C	6 : 0 : 0 : 3

Objectives

1. To learn the concepts of state of art in network protocols, architecture and applications.

Unit	Syllabus Contents	Number of Sessions
I	Data communications – Components - Data Representation - Direction of data flow-Networks - Categories – Topologies - Protocols and Standards - ISO/OSI Model - Layers in the OSI model - TCP/IP Protocol suite - Addressing.	12
II	Physical layer and Media: Analog and Digital – Data rate limits- bandwidth utilization: Multiplexing-Spread Spectrum – Transmission media –Guided media and unguided media-switching-circuit switched networks-virtual circuit networks.	12
III	Data link layer - Error Detection and Correction –Types of Errors – Redundancy - Detection Vs Correction - Forward error correction Vs Retransmission – Framing - Flow and Error control -Noiseless channels - Noisy channel – HDLC. Wireless channels: Bluetooth – connecting devices-SONET – Architecture - Layers of SONET. Networking – Addresses – IPv4 – IPv6 . IPV4 – Datagram – Fragmentation - Checksum – options. IPV6 – Advantages – Packet Format – Extension headers – Transition from IPV4 to IPv6 – Dual stack – Tunneling – Header Translation – ICMP – IGMP.	12
IV	UDP – Ports for UDP – User Datagram – checksum – operations – uses .TCP –Services – Features – Segment – Connection – Flow Control – Error Control - SCTP. Congestion Control – Open loop – Closed loop – QOS – Integrated Services.	12
V	DNS – Distribution of Namespace – DNS in the Internet –DNS Messages – Types of Records - WWW and HTTP– Architecture – Web documents – HTTP. Presentation Layer – Protocols – Services. Session Layer: Protocols – Services. Network security: Cryptography – Symmetric-Key Cryptography – Asymmetric-Key Cryptography – Security Services - Digital Signature.	12

Learning Resources	
Text Books	1. "Data communications and Internetworking ", Behrouz A Forouzan, Fourth Edition,2006. 2. "Computer Networks",Tannenbaum , Fifth Edition.
Reference Books	1. Computer Networking: Principles,Protocols and Practice, Olivier Bonaventure,2011. 2. James F.Kurose and Keith W.ROSS, "Computer Networking: A Top-Down Approach Featuring the Internet", Fifth Edition 2012. 3. Andrew S.Tanenbaum ," Computer Networks", PHI, Fourth Edition ,2008.
Web Sites / Links	1. www.tutorialspoint.com/**computer**.../**computer_networking**.htm 2. www.journals.elsevier.com/**computer-networks**/

Subject Title	Relational Database Management Systems	Semester	III
Subject Code	14U3ITC05	Specialization	NA
Type	Core	L:T:P:C	5 : 0 : 0 : 5

Objectives

1. To understand the concepts of Relational database management systems and enable the students to learn the data base systems, SQL, PL/SQL and Developer 2000.On successful completion of the course the students should understood the designing the data base and concepts of database management systems.

Unit	Syllabus Contents	Number of Sessions
I	**Introduction to DBMS**: Information – Data and Data Management – Characteristics of a data in a database –– Functions of DBMS – Components of DBMS – data dictionary. **Data Base Architecture and Design**: Introduction – Data base architecture – data abstraction. **Entity – Relationship Modeling:** Introduction – ER Model – Components of ER model – **Relationships**: Degree-Connectivity-Cardinality– ER modeling symbols. **Data Normalization**: Normalization-1NF-2NF-3NF-BCNF-4NF-5NF– Denormalization.	11
II	Oracle9*i*: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - *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.	11
III	Working with Table: Data Management and Retrieval: DML – Adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records –Retrieving Data from Table – Arithmetic Operations – Restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.	11
IV	PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.	12
V	PL/SQL Composite Data Types: Records – Tables – Varrays. Named Blocks: Procedures – Functions – Packages –Triggers – Data Dictionary Views.	11

Learning Resources	
Text Books	1."Fundamentals of Data base management System" – Alexix Leon and Mathew Leon, TMH PublicationsReprint, 2010. 2. "Database systems using oracle" – Nilesh Shah, 2nd edition, PHI.
Reference Books	1. Database Management Systems – Arun Majumdar, Pritimoy Bhattacharya, TMH. 2. Database Management Systems – Gerald V. Post, 3rd edition, TMH.
Web Sites / Links	1.http://www.studytonight.com/dbms/rdbms-concept 2.http://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm

Subject Title	**RELATIONAL DATABASE MANAGEMENT SYSTEMS LAB**	Semester	**III**
Subject Code	**14U3ITCP03**	**Specialization**	**NA**
Type	**Fundamental**	**L:T:P:C**	**0 : 0 : 3 : 3**

Objectives

1. To understand the concepts of Relational database management systems and enable the students to learn the data base systems, SQL, PL/SQL and Developer 2000.On successful completion of the course the students should understood the designing the data base and concepts of database management systems.

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List of Programs

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1. Basic SQL Queries
    i) DDL Statements ii) DML Statements
2. Simple Queries using built in functions.
3. Simple Queries Using set operations.
4. Database Schema for a customer-sale scenario

   Customer (Cust id : integer, cust_name: string)

   Item (item_id: integer, item_name: string, price: integer)

   Sale (bill_no: integer, bill_data: date, cust_id: integer, item_id: integer, qty_sold: integer)

   For the above schema, perform the following:
- Create the tables with the appropriate integrity constraints
- Insert around 10 records in each of the tables
- List all the bills for the current date with the customer names and item numbers.
- List the details of the customer who have bought a product which has a price>200

5. Database Schema for a Student Library scenario

   Student(Stud_no : integer, Stud_name: string)

   Membership (Mem_no: integer, Stud_no: integer)

   Book (book_no: integer, book_name:string, author: string)

   Iss_rec(iss_no:integer, iss_date: date, Mem_no: integer, book_no: integer)

   For the above schema, perform the following:
- Create the tables with the appropriate integrity constraints
- Insert around 10 records in each of the tables
- List all the student names with their membership numbers
- List all the issues for the current date with student and Book names
- List the details of students who borrowed book whose author is CJDATE

6.Database Schema for a Employee-pay scenario

   employee(emp_id : integer, emp_name: string)

   department(dept_id: integer, dept_name:string)

   paydetails(emp_id : integer, dept_id: integer, basic: integer, deductions: integer, additions: integer, DOJ: date)

   payroll(emp_id : integer, pay_date: date)

For the above schema, perform the following:

- Create the tables with the appropriate integrity constraints
- Insert around 10 records in each of the tables
- List the employee details department wise
- List all the employee names who joined after particular date
- List the details of employees whose basic salary is between 10,000 and 20,000
- List the details for an employee_id=5

7. Write a PL/SQL program to find largest number from the given three numbers.
8. Write a PL/SQL program to check whether the given number is Armstrong or not
9. Write a PL/SQL program to implement trigger
10. Write a PL/SQL program to implement cursor.

Subject Title	SBEC:I Office Automation	Semester	III
Subject Code	14U3ITS01	Specialization	NA
Type	SBEC	L:T:P:C	3 : 0 : 0 : 2

Objectives

    1. To Provide awareness in automation and to sketch out the hidden talent of students community recruitment.

Unit	Syllabus Contents	Number of Sessions
I	Introduction: Introduction to MS-Office.MS-word: Introduction to word basics-Commands-Copying and Moving Text-Working with text- Find and Replace-Formatting Text-Mail Merge-Table-Spell Check and Grammar.	05
II	MS-EXCEL: Excel Basics-Introduction-Menus-Toolbars-Icons-Opening Excel-Cells-Entering and Editing Data-Creation of Chart-Naming Formulas-Functions.	05
III	MS-POWERPOINT: Introduction-Menus-Toolbars-Creating and Editing Slides-Working with PowerPoint.	03
IV	MS-ACCESS: Introduction-Starting Microsoft Access-Creating New Database-Opening Existing Database-Access Database Wizards-Tables-Creating Query.	04
V	MS-FRONTPAGE: Introduction-Menus-Toolbars-Creating Webpage-With Wizard-Hyperlinks	03

Learning Resources	
Text Books	1.Sanjay Saxena,"MS-OFFICE 2000 for Everyone", Vikas Pub.House, NewDelhi. (Part-II, III, IV, V, VI& IX).
Reference Books	
Web Sites / Links	1.https://en.wikipedia.org/wiki/Microsoft_Office

Subject Title	Web Services	Semester	IV
Subject Code	**14U4ITC06**	Specialization	NA
Type	**Core**	L:T:P:C	**6 : 0 : 0 : 3**

Objectives

    1.To know about the role in implementing Service Oriented Architecture (SOA).

Unit	Syllabus Contents	Number of Sessions
I	Introduction: Role of XML-XML and the web- XML Language Basics-SOAP-Web Services-Revolution of XML-Service Oriented Architecture (SOA)	10
II	XML Technology: XML-Name Space-Structuring with schemas and DTD-Presentation Techniques-Transformation-XML Infrastructure**.**	11
III	SOAP: Overview of SOAP-HTTP-XML- RPC-SOAP, Protocol-Message Structure-SOAP with Attachments.	12
IV	Web Services: Overview-Architecture-Key Technologies-UDDI- WSDC-ebxml-SOAP and web services in E-Commerce**.**	11
V	XML Security: Security overview-Canonicalization-XML Security Frame work-XML Encryption-XML Digital Signature.	12

Learning Resources	
Text Books	1.Frank P Coyle XML, Web Services and the Data Revolution, Pearson Education,2002.
Reference Books	1.Sandeep Chatterjee,James Webber,"Developing Enterprise Web Services".Pearson Education,2004. 2.Ramesh Nagappan,Robert Skocylas and Rima PatelSriganesh,"Developing Java Web services", Wiley Publishing,Inc,2004.
Web Sites / Links	1.http://www.w3schools.com/webservices/ws_intro.asp 2.http://www.service-architecture.com/articles/web-services/web_services_definition.html

Subject Title	Operating Systems	Semester	IV
Subject Code	14U4ITC07	Specialization	NA
Type	Core	L:T:P:C	6 : 0 : 0 : 3

Objectives

      1. This course provides the overview of computer system and the operating system, the concepts of process management, memory management, storage management, protection and security issues, and distributed systems.

Unit	Syllabus Contents	Number of Sessions
I	**Operating System Overview:** Operating System Objectives and Functions. **History of Operating System:** First – Second – Third – Fourth Generation Operating **System. Types of Operating System:** Main Frame – Server – Multiprocessor – Personal Computer – Embedded – Real-Time Operating System. The Evolution of Operating System – Major Achievements of Operating System.	10
II	**Threads:** Process and Threads – Multithreading – Thread Functionality – **Mutual Exclusion and Synchronization:** Principles of Concurrency – Mutual Exclusion – Semaphores. **Deadlock and Starvation:** Resources – Principles of Deadlock – Deadlock Detection and Recovery – Deadlock Avoidance and Prevention.	12
III	**Memory Management:** Memory Management Requirements – Memory Partitioning – Paging – Segmentation. **Virtual Memory:** Hardware and Control Structures. **Operating System Software:** Fetch Policy – Placement Policy – Replacement Policy – Basic Algorithms – Page Buffering	11
IV	**Scheduling: Types of Scheduling:** Long Term Scheduling – Medium Term Scheduling – Short-Term Scheduling. **Scheduling Algorithm:** Short Term Scheduling Criteria – The Use of Priorities – Alternative Scheduling Policies. **File Management:** Overview – File Organization and Access – File Sharing – Record Blocking – Secondary Storage Management.	12
V	I/O Devices-Organization of the I/O Functions: The Evolution of the I/O function-Direct Memory Access. I/O Buffering: Single Buffer-Double Buffer-Circular Buffer-The Utilities of Buffering. Disk Scheduling: Disk Performance Parameters-Disk Scheduling Polices-RAID.	11

Learning Resources	
Text Books	1. "Operating Systems Internals and Design Principles" by William Stallings, Second Edition, PHI Learning Private Limited, NewDelhi, 2008.
Reference Books	1."Modern Operating Systems" by Andrew S. Tanenbaum, Third Edition, PHLearning Privated Limited, NewDelhi, 2011. 2."Operating Systems", by Achyut S Godbole, Second Edition, TMH Publishing Company Limited, New Delhi, 2008. 3."Operating System Concepts", by Silberschatz, Galvin and Gagne, Sixth Edition, John Wiley & Sons Inc 2002.
Web Sites / Links	1.http://faculty.salina.k-state.edu/tim/ossg/Introduction/OSrole.html 2.www.tutorialspoint.com/**operating_system**/

Subject Title	Visual Basic	Semester	IV
Subject Code	14U4ITC08	Specialization	NA
Type	Core	L:T:P:C	6 : 0 : 0 : 5

Objectives

     1. Students can learn to design and develop Windows-based business applications using Visual Basic.

Unit	Syllabus Contents	Number of Sessions
I	Customizing a form and writing simple programs:- starting a new project- common form properties-color properties-making a form responsive- creating stand alone windows programs. first steps in building the user Interface:- Toolbox- creating controls- The name property- properties of command button-Image controls- textboxes-labels-message boxes-The grid.	12
II	First steps in programming:- statements in visual basic-variables- data types-working with variables-Input box. Display information:- Displaying information on form-Format function- picture boxes- Richtext boxes-controlling program flow:- Determinate loops-making decision-select case-nested If-then's-Built-in-functions:- string functions- numeric functions-Date and time functions.	12
III	Writing your own functions and procedures:- Function procedures-sub procedures- advanced uses of procedures and functions. Organizing Information via code:- Lists-one dimensional Arrays-Arrays with more than one dimension-The new array based string.	12
IV	Organizing Information via controls:- control Arrays-List and combo boxes-The Flex Grid controls. Building Larger Projects:- The Doevents function an submain- Error Trapping. VB objects and on Introduction to object-oriented Programming:- Creating a object in visual basic-Building Your own classes.	12
V	An Introduction to Graphics :- Fundamentals of Graphics – Line and Shape controls – Line and Boxes. An Introduction to Programming with Database objects – other useful methods and Events for Data control. Clip Board , DDE , OLE , Data Control – Programming with Data Control – Monitoring Changes to the Databases – SQL – Basics Database Objects.	12

Learning Resources	
Text Books	1.Visual Basic 6 – from ground up" - Gray Cornell, Tata Mcgraw hill private limited – reprint 2011 2.Gary Comell – "Visual Basic 6.0 Programming"– Tata McGraw Hill Edition.
Reference Books	1.Peter nortan's and Michael Groh , 1998 – " Guide to Visual Basic 6 Techmedia" - "Visual Basic"- Paul Sheriff – PHI – Reprint 2008 2."Mastering Visual Basic 6" – Evengelus petroutsus – BPB publications
Web Sites / Links	1.https://msdn.microsoft.com/en-us/library/2x7h1hfk.aspx 2.www.vbtutor.net/vbtutor.html

Subject Title	Visual Basic Lab	Semester	IV
Subject Code	14U4ITCP04	Specialization	NA
Type	Core	L:T:P:C	0 : 0 : 3 : 3

Objectives

1. Students can learn to design and develop Windows-based business applications using Visual Basic.

List of Programs

1. Develop a VB Project to Perform following Operations in MS-ACCESS database using DAO

   a.   . Move First Record

   b.   . Move Next Record

   c.   . Move Previous Record

   d.   . Move Last Record

2. Develop a VB Project to Insert a Record in database using ADO

3. Develop a VB Project to Check User Name & Password Given by User.

4. Develop a VB Project to Add & Remove Items From List Box.

5. Develop a VB Project to Copy all Items in a List Box to Combo Box.

6. Develop a VB Project to Enter and Display Student Information.

7. Develop a VB Project to Scroll Text from Left to Right Using Timer.

8. Develop a VB Project to Mini Calculator Functions.

9. Develop a VB Project to Documents typing using MDI Form.

10. Write a VB Coding to design a menu editor.

Subject Title	DTP Package	Semester	IV
Subject Code	14U4ITS02	Specialization	NA
Type	SBEC	L:T:P:C	2 : 0 : 0 : 2

Objectives

    1 The Students know of the versatility of the microcomputer with page-design software, enabling students to produce materials of near photo-typed quality.

Unit	Syllabus Contents	Number of Sessions
I	INTRODUCTION: Choosing the printing house - Hardware Requirement for DTP -General Design Considerations - Text Organization – Design Common Media Publication.	12
II	PAGEMAKER: Getting Started with PageMaker – Working in PageMaker – The PageMaker window – Working with text – Multiple Text Block. Editing Text: Making Changing in the Publication – Searching by Format – Replacing the Text.Formatting Text: Changing the Font Size – Making the text bold – Removing Boldface from the text – Underlining the text – Aligning the text.	12
III	Master pages: Adding Text to the Publication – Element on master pages – Creating a new Publication – Working with Columns. Managing and Printing a publication: Page Orientation – Page Numbering – Page Size – Dimension – Table of Contents – Managing Books – Printing a Publication.	12
IV	PHOTOSHOP- Starting Photoshop CS2 - Photoshop Program Window Working with Images: Editing Images – Color Modes.	12
V	Making Selections: Moving a Portion of Images – Editing Selections – Filling a Selection -Transforming Selections Painting Tools: Drawing Tools – Retouching Tools.	12

Learning Resources	
Text Books	1. "COMDEX-DTP Course Kit" Vikas Gupta, Dreamtech Publishers- New Delhi, 2008.
Reference Books	1."ADOBE PHOTOSHOP CS6 Bible",Lisa DaNae Dayley and Brad Dayley,2006 2."ADOBE IN DESIGN CC on Demand", Steve Johnson,Que Publishing ,2013
Web Sites / Links	1.https://en.wikipedia.org/wiki/Desktop_publishing 2.http://www.businessdictionary.com/definition/desktop-publishing-DTP.html

Subject Title	Java Programming	Semester	V
Subject Code	14U5ITC09	Specialization	NA
Type	Core	L:T:P:C	6 : 0 : 0 : 5

Objectives
1. The objective of Java Programming is used web programming. Any Web developer needs to have the knowledge of Java programming.

Unit	Syllabus Contents	Number of Sessions
I	Introduction - Object Oriented Programming - History of Java – Byte Code – A first Simple program – I/O Basis – Reading / Writing Console Input/Output – Lexical Issues – Java Data types – Variables – Type Conversion and Casting – Arrays – Operators – Control Statements.	12
II	Classes and Objects: A Simple Class and Declaring Objects, Methods – Examples – Constructor's – Inheritance – Basics – Using super - Creating a Multilevel Hierarchy – Packages and Interfaces: Packages – Access Protection – Importing Packages – Interfaces.	12
III	Exception Handling: Fundamentals – Types – Using try and catch – Built in Exceptions – Throwing our own Exception .Introducing AWT: AWT classes – Windows fundamentals - Working with frame windows – Working with graphics – Control fundamentals – Labels – Buttons – Text Field.	12
IV	Database programming: The Design of JDBC – JDBC Driver types – Uses of JDBC – SQL – Connecting to the database – Executing SQL – Statements – Managing Connections – Statements and Result sets – SQL Exception. The Applet Class-types of Applet- Basics-Applet Class – Architecture – An applet Skeleton - Applet Initialization and Termination- Overriding update( )	12
V	Simple Applet Display Methods -Requesting Repainting -A Simple Banner Applet -Using the Status Window -The HTML APPLET Tag -Passing Parameters to Applets -Improving the Banner Applet -getDocumentBase( ) and getCodeBase( ) -AppletContext and showDocument( ) -The AudioClip Interface -The AppletStub Interface-Outputting to the Console	12

	Learning Resources	
Text Books	1.Herbert Schildt , The Complete Reference Java II,5th Edition , TATA Mc Graw-Hill 2002. 2.Cays.Hortmann hary cornell, Core Java Volume II – Advanced Features, Pearson education 2010.	
Reference Books	1. Deital Deital "Java How to Program" Pearson Education,2005 2. Rashmi kanta Das "Core Java: For Beginners, Vikas Publishing Pvt Ltd,2009. 3. Martin *Rinchart*, "Java database development", Tata Mcgraw Hill 2000.	
Web Sites / Links	1. www.csee.umbc.edu/courses/331/spring03/0101/lectures/java02.ppt 2. www.slideshare.net/intelligotech/java-tutorial-ppt-7189933	

Subject Title	Compiler Design	Semester	V
Subject Code	14U5ITC10	Specialization	NA
Type	Core	L:T:P:C	5 : 0 : 0 : 5

<u>Objectives</u>
1. To introduce the major concept areas of language translation and compiler design.
2. To enrich the knowledge in various phases of compiler ant its use, code optimization techniques, machine code generation, and use of symbol table.

Unit	Syllabus Contents	Number of Sessions
I	Introduction to Compliers: Compliers and Translator – Need of Translator – The structure of a Complier – Lexical analysis – Syntax analysis – Intermediate code generation –Optimization – Code generation – Complier writing tools. Finite automata and lexical Analysis: The role of the lexical analysis – A simple approach to the design of lexical analyzers- Regular expressions to finite automata – Minimizing the number of states of a DFA- Lexical analyzer generator Lex.	12
II	The Syntactic specification of programming languages: Context free grammars –Derivations and parse trees - Capabilities of context free grammars. Basic parsing techniques: Parsers – Shift reduce parsing – Operator precedence parsing – Top down parsing – Predictive parsers-Parser Generators:YACC.	12
III	Syntax directed translation: Intermediate code – Postfix notation – Parse trees and syntax trees – 3 address code – Quadruples and triples –Boolean expressions – Statements that alter the flow of control. Symbol tables: The contents of a symbol table – Data structures for symbol table – Representing scope	12
IV	Run time storage administration: Implementation of a simple stack allocation scheme –Implementation of block-structured languages. Error deduction and recovery: Errors – Lexical phase errors – Syntactic phase errors – Semantic errors.	12
V	Introduction of code optimization: The principle sources of optimization – Loop optimization – The DAG representation of basic blocks –Global data flow analysis. Code generation: Object programs – Problems in code generation–A simple code generator – Register allocation and assignment – Code generation from DAG's–Peepholes optimization.	12

Learning Resources	
Text Books	1. Alfred V.Aho, Jeffrey D.Ullman, Principles of Complier Design, Narosa Publications House,15th Reprint 2002.
Reference Books	1. Alfred V.Aho, Monica S.Lam, Ravi sethi,Jeffrey D.Ullman,Compilers-Principles, Techniques and Tools by Pearson Education 2007.
	2. Dick Grune, Henri E.Bal,Cerial J.H Jocobs, Koen G.Langendoen "Modern Compiler Design", Wiley India Ltd,2011.
	3. Allen I.Holub, "Compiler Design in C" Prentice Hall of India Private Ltd New Delhi 2002.
Web Sites / Links	1. www.tutorialspoint.com/compiler_design/compiler_design_runtime_environment.htm
	2. www.cs.fsu.edu/~xyuan/cop4020/compiler_phases.ppt

Content beyond the syllabus:
1. Develop an understanding of the compilation process.
2. Generate a parser for the MiniJava language using the CUP parser generator.

Subject Title	Data Mining and Data warehousing	Semester	V
Subject Code	14U5ITC11	Specialization	NA
Type	Core	L:T:P:C	5:0:0:5

Objectives
1. Understand data mining principles and techniques
2. Introduce DM as a method and acquaint the students with the DM techniques.

Unit	Syllabus Contents	Number of Sessions
I	Introduction: What motivated data mining?-Why is it important?-What is data mining?-Data mining-On what kind of data?-Data mining Functionalities-Classification of Data mining-Data mining task primitives-Integration of a Data mining System with a Database or Data Warehouse System-Major issues in Data mining	12
II	Data Preprocessing: Why Preprocess the Data?-Descriptive Data Summarization-Data Cleaning-Data Integration and Transformation-Data Reduction-Data Discretization and Concept Hierarchy Generation	12
III	Mining Frequent patterns, Associations and Correlations: Mining various kinds of association Rules-Classification and Prediction: What is Classification? What is Prediction? Issues regarding classification and Prediction-Bayesian Classification-Classification by Back propagation-Prediction	12
IV	Types of Data in cluster Analysis-Categorization of major Clustering methods Hierarchical methods-Density-based Methods-Spatial Data mining-Text mining-Data Mining Applications-Social Impacts of data mining-Trends in data mining	12
V	Data Warehouse and OLAP Technology: What is Data Warehouse? A Multidimensional Data Model-Data Warehouse Architecture-Data Warehouse Implementation	12

Learning Resources	
Text Books	1. Jiawei Han and Micheline Kamber,"DATA MINING Concepts and Techniques", Morgan Kaufmann Publishers,Second Edition,2006.
Reference Books	1. Soman K. P, Shyam Diwakar, V. Ajay, Data Mining, Printice Hall, 2008. 2. Arun K.Pujari, "Data Mining Techniques", Universities Press (India) Limited, 2001. 3. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson, 2008.

Subject Title	Programming in Java Lab	Semester	V
Subject Code	14U5ITCP05	Specialization	NA
Type	Core	L:T:P:C	3:0:0:3

Objective:
1. Write clear, elementary Java programs (applets and applications)
2. Use the Java interpreter to run Java applications
3. Read, write, and debug Java programs
4. Write programs using object-based programming techniques including classes, objects

List of Programs
1. Write a java program to generate Fibonacci series.
2. Write a java program to display tables from 1 to 10 using 2d Array.
3. Implementation of Classes and Objects concepts.
4. Implementation of Constructor.
5. Write a java program to create user defined exception.
6. Implementation of Interface concept.
7. Implementation of packages in java.
8. Implementation of multithreading.
9. Implementation of networking concepts.
10. Write a java program to illustrate a basic Applet.
11. Create an Applet program for recording student information
12. Implementation of Database programming using JDBC.

Subject Title	**CorelDRAW**	Semester	V
Subject Code	**14U5ITS03**	**Specialization**	**NA**
Type	**SBEC:III**	**L:T:P:C**	**2:0:0:2**

Objectives

1. To create illustrations, page layout, web graphics.
2. Students can able to use their own designing skills with this applications to create stunning illustrations, logos, advertisement.

Unit	Syllabus Contents	Number of Sessions
I	Understanding corelDRAW-graphics suite x4- corelDRAW-graphics suite applications-new and enhanced feature in corelDRAW- getting started with corelDRAW- exploring the workspace of corelDRAW- menu bar-standard-toolbar-property bar-tool box-drawing page-docker-color palette-drawing basic geometric figures- working with page layout	**04**
II	Working with lines-Drawing a curve-drawing calligraphic lines-about outline tool-defining lines and outlines setting-creating a calligraphic outline-adding an arrowhead	**04**
III	Working with objects-Selecting and deselecting objects-Deleting objects-sizing objects- combing objects-grouping in corelDRAW-grouping objects-ungrouping objects- applying convert to curve command on objects-selecting color on objects-filling objects-using fills-using pattern fills	**04**
IV	Working with text-Types of text-preparing layout for using the text-creating artistic text-creating paragraph text- converting text from one type to another changing the appearance- font-font size- alignment-applying effects- drop cap- bulleted list-wrapping paragraph-converting text to an object-curve command-breaking part text	**04**
V	Working with bitmaps-Changing vector images to bitmap images – converting vector images to bitmap images- converting vector images to bitmap images when exporting –importing a bitmap into drawing-cropping-resembling and resizing-special effects to bitmaps-color transform-sharpen-tracing	**04**

Learning Resources	
Text Books	1. Comdex 9 in 1 DTP Course Kit, VIKAS GUPTA, Dream Tech Press
Reference Books	1. Learning CorelDRAW X4,Ramesh Bangia,First Edition,2003 2. CorelDRAW X7 Official Guide,BOUTON,Eleventh Edition
Web Sites / Links	1. product.corel.com/help/CorelDRAW/540229932/Main/EN/.../CorelDRAW-X7.pd 2. learn.corel.com › Graphics Tutorials › CorelDRAW Tutorials 3. www.coreldraw.com/us/pages/800382.html

Subject Title	Computer Installation and Servicing	Semester	V
Subject Code	14U5ITS04	Specialization	NA
Type	SBEC:IV	L:T:P:C	3

Objectives

1. Aims to equip participants with basic knowledge and skills about computer hardware and software maintenance and troubleshooting of common problems

Unit	Syllabus Contents	Number of Sessions
I	The Visible PC: How the PC Works –input – processing – output – storage. The Complete PC: External Connections – Devices and their connections – Inside the system unit: Case – CPU – Ram – Motherboard – Power supply – Hard drive – Optical Drives.	04
II	Learning CPU: Memory and RAM – Address Bus – Modern CPU's - Intel Pentium early processors – Intel Pentium 4 – Intel core – AMD athelon – AMD Duron – Intel Celeron – Intel Pentium Dual Core – Intel Core i7. Types of RAM's: SDRAM – RDDRAM –DDRSDRAM - DDR2 – DDR3 – RAM Variations.	04
III	Learning Motherboard: CMOS – BIOS – POST - Expansion Slots – Motherboard Components – Hardware Technologies: Platter Based – Solid Based Drives – Parallel and Serial ATA's – SCSI – RAID. Removable Media: Flash Memory – USB – Flash Cards - Optical Devices – CD – DVD-Blue-ray Media's.	04
IV	Installing & Upgrading Windows: Hardware Requirements – type of installation - Backup & Restoring Data – Partition the Hard Drive and file System – Installing XP Professional – Post Installation Tasks – Boot Process – Partitioning Files.	04
V	Learning Local Area Networking: Topologies – Network organization – Configuring TCP/IP – Wireless Networking Components - Wireless Networking Standards – Connecting to the Internet. Computer Security: Security Concepts – Malicious Software – Virus Prevention and Recovery.	04

Learning Resources	
Text Books	1. Mike Meyers, "Introduction to PC Hardware and Troubleshooting", Tata McGraw-Hill, New Delhi, 2003.
Reference Books	. Craig Zacker & John Rourke, "The complete reference:PC hardware", Tata McGraw-Hill, New Delhi, 2001. 2. B.Govindarajulu, "IBM PC and Clones hardware trouble shooting and maintenance", Tata McGraw-Hill, New Delhi, 2002. 3. Stephen J.Bigelow, "Trouble Shooting, maintaining and Repairing PCs", Tata McGraw-Hill, New Delhi, 2001.

Subject Title	Web Technology	Semester	VI
Subject Code	14U6ITC12	Specialization	NA
Type	Core	L:T:P:C	5

Objectives

1. It covers the TCP/IP Basics.
2. It includes Basics of Browser,tiers,servlets ,web security and XML.

Unit	Syllabus Contents	Number of Sessions
I	TCP/IP : TCP/IP Basics – Why IP address – Logical Address - TCP/IP Example- The concept of IP address – Basics of TCP – Features of TCP – Relationship between TCP and IP – Ports and Sockets – Active Open and Passive Open - TCP Connections – What makes TCP reliable? – TCP Packet format - Persistent TCP connections – UDP – Differences between TCP and UDP.	12
II	DNS – E-mail – FTP – TFTP – History of WWW – Basics of WWW and Browsing – HTML – Web Browser Architecture – Common gateway interface – Remote Login (TELNET).	12
III	Introduction to Web Technology: Popular Web Technologies- Tiers – Concept of a Tier – Java Web Technologies –Java Servlets – Introduction – Servlet Advantages – Servlet Lifecycle – Servlet Examples - Java Server Pages – Introduction – Elements of JSP.	12
IV	Web Security :Introduction – Priniciples of Security – Cryptography - Plain text and Cipher Text – Digital Certificates – Digital Signatukres – Secure Socket Layer. Network Security : Introduction – Firewalls – IP Security- Virtual Private Networks(VPN).	12
V	XML: Basics of XML – XML vs HTML – Electronic Data Interchange(EDI) – XML Terminology – Introduction to DTD – Document type Declaration – Element Type Declaration – Limitations of DTD.Online Payments – Introduction – Payment using Credit Cards – Secure Electronic Transaction(SET) – PayPal.	12

Learning Resources	
Text Books	1. Achyut S Godbole & Atul Kahate "Web Technologies TCP/IP to Internet Applications Architectures" 2007, TMH.
Reference Books	1. Rajkamal,"INTERNET AND WEB TECHNOLOGIES", TMH.
Web Sites / Links	1. http://www.worldwebtechnologies.com/ 2. http://www.worldwebtechnologies.com/web-design-process.html

Subject Title	Web Technology Lab	Semester	VI
Subject Code	14U6ITCP06	Specialization	NA
Type	Core	L:T:P:C	3

Objectives
1. Analyze a webpage and identify its elements and attributes.
2. Create webpages using XHTML and Cascading Style Sheets.

List of Programs:
1. Design a web page for your College using basic HTML tags.
2. Create a Web page with the following using HTML

a) To embed an image map in a web page
b) To fix the hot spots
c) Show all the related information when the hot spots are clicked.

3. Create a Web page with all types of cascading style sheets.
4. Write a programs in java using Servlets: To invoke servlets from HTML forms.
5. Write a JSP program to perform form validation.
6. Create a XML program to show the CD catalog information in a web page.
7. Programs using XML-Schema-XSLT/XSL.
8. Write your own XML and apply CSS style Sheet format for your program.
9. Write a program using XML-DTD.
10. Programs using TCP/IP Sockets.

Subject Title	Mobile Application Development	Semester	VI
Subject Code	14U6ITS05	Specialization	NA
Type	SBEC:V	L:T:P:C	3

Objectives
1. Gain a basic understanding of computer architecture and object oriented programming.
2. Understand Mobile application Design Principles.
3. Identify need and opportunity in app markets.

Unit	Syllabus Contents	Number of Sessions
I	Introduction to Open Source: What is Open Source- License Issues (MPL, GPL, and LGPL) and Open Source Vs Traditional Development Methodologies. Introduction to Android: Introducing Android-History of Mobile Software Development-Open Handset Alliance-the Android Platform-Layers of Android-Android SDK-Kinds of Android Components-Building a Sample Android Application.	04
II	Android Application Design Essentials: Anatomy of an Android Applications-Android Terminologies- Application Context-Actives - Services-Intents-Receiving and Broadcasting Intents-Android Manifest File and its common settings-Using Intent Filter-Permissions-Managing Application resources in a hierarchy-Working with different types of resources.	04
III	Android Application Design Essentials: User Interface Screen Elements-Designing User Interfaces with Layouts- Drawing and Working with Animation.	04
IV	Using Common Android APIs:Using Android Data and Storage APIs-Managing data using SQLite-Sharing Data between Applications with Content Providers-Using Android Networking APIs-Using Android Web APIs and Using Android Telephony APIs.	04
V	DDMS-Debug and Other View:DDMS - Dalvik Debug Monitor Server-LogCat View-File explorer-Breakpoints and Debug.	04

Learning Resources	
Text Books	1. Lauren Darcey and Shane Conder, "Android Wireless Application Development", Pearson Education, 2nd Edition, 2011. 2. W. Frank Ableson, Robi Sen, Chris King, "Android in Action", 2nd Edition, Manning Publications Co., 2011.
Reference Books	1. Chris Haseman, "Android Essentials", Apress Publications, 2008. 2. James Steele, Nelson To, "The Android Developer's Cookbook-Building Applications with the Android SDK", Addison-Wesley Publications, 2011.

Subject Title	Basics of Unix and Linux	Semester	VI
Subject Code	14U6ITS06	Specialization	NA
Type	SBEC:VI	L:T:P:C	2

Objectives
1. To Introduce UNIX and LINUX workstations.
2. Develop a Deeper understanding of operating systems their functions and services.
3. To Learn the fundamentals of the UNIX and LINUX Commands.

Unit	Syllabus Contents	Number of Sessions
I	Introduction – Operating system – Function of Operating system – Types of Systems – Why study UNIX-Linux-Logging onto a system – Surveying the development of Unix and Linux – Issuing commands to execute utilities – UNIX Architecture – Features of UNIX – Locating commands – Internal and External commands – Command structure – Flexibility of command usage.	04
II	General purpose utilities: cal: The calendar – date: Displaying the System date – echo: Displaying a message – printf: An Alternate to echo – Email Basics – mailx – passwd – who. The File System: pwd: Checking your current directory – cd: Changing the current Directory – mkdir : Making Directories – rmdir: Removing Directories.	04
III	Handling ordinary Files – Basic File Attributes – Simple Filters – Filtering using Regular expression.	04
IV	The Linux operating system: The history of Linux – Linux Architecture – Linux compared to UNIX – Features and utilities in Linux – Shell available in Linux – Creating files using the Vi editor: Text editors – The Vi editors – The emacs editors – The joe editors. Managing Files and Directories: Introduction – Directory commands in Linux – File Commands in Linux.	04
V	Managing Documents: Locating files in Linux – standard files – Redirection – Filters – Pipes. Communicating with other users in Linux: mesg command – whoT- talk – write – finger – chfn utility – ping – traceroute command – ssh command – FTP command – ncftp command.	04

Learning Resources	
Text Books	1. Sumitabha das, "UNIX Concepts and Applications" fourth edition Tata Mcgraw Hill Publishing Company Limited,2006. 2. Operating System LINUX, NIIT Prentice Hall of India Private Ltd, New Delhi,2003.
Reference Books	1. John Muster "Introduction to UNIX and LINUX" Tata Mcgraw Hill Publishing Company Limited,2003 2. Richard Petersen "The Complete Reference" Tata Mcgraw Hill Edition, 2008.
Web Sites / Links	1. https://www.linux.com 2. http://www.ee.surrey.ac.uk/Teaching/Unix/unixintro.html

Subject Title	Artificial Intelligence and Expert Systems	Semester	V
Subject Code	14U5ITE01	Specialization	NA
Type	Elective:I	L:T:P:C	5

Objectives
1. To provide an overview of topics in the field of Artificial Intelligence.
2. Working Knowledge of designing a expert systems and applying expert system technologies in designing and analyzing engineering systems.

Unit	Syllabus Contents	Number of Sessions
I	Introduction: Artificial Intelligence Problems- Artificial Intelligence Techniques-Criteria for Success. Problems, Problems Space, Search: State Space Search-Production Systems-Problem Characteristics- Issues in design of search. Heuristic Search Techniques: Generate & Test- Hill climbing- Best First, problem Reduction, Constraint satisfaction, Means End Analysis.	12
II	Knowledge Representation Issues: Representations and Mappings- Approaches to Knowledge representation-Issues in knowledge representations-The Frame Problem. Using Predicate Logic: Representing Simple Facts in Logic-Representing instance and ISA Relationships- Computable Functions and Predicates- Resolution-Natural deduction.	12
III	Representing Knowledge Rules: Procedural vs. Declarative Knowledge- Logic Programming- Forward vs Backward Reasoning- Matching- Control Knowledge-Symbolic Reasoning under Uncertainty: Introduction to Nonmonotonic Reasoning- Logics for Nonmonotonic Reasoning- Implementation Issues Augmenting Problem Solver- Implementation: Depth First Search-Implementation: Breadth First Search	12
IV	Statistical Reasoning: Probability and Bayes Theorem-Certainty Factors and Rule-based Systems- Bayesian Networks- Dempster- Shafer Theory- Fuzzy Logic- Weak slot -Filler Structures: Semantic Nets Frames. Strong Slot Filler Structures: Conceptual Dependency- Scripts	12
V	Game Playing: Overview-The Minimax Search Procedure-Adding Alpha-Beta Cutoffs-Additional Refinements- Expert Systems: Representing and using Domain Knowledge-Expert system Shells- Explanation- Knowledge Acquisition	12

Learning Resources	
Text Books	1. Elaine Rich ,Kevin Knight,Shivashankar B Nair, "Artificial Intelligence", Tata McGraw-Hill Publication, 3rd Edition,2010
Reference Books	1. Donald A.Waterman – A Guide to Expert Systems Tata Mcgraw Hill – second Edition,1991. 2. Stuart Russell and Peter Norving ,"Artificial Intelligence – A Modern Approach"Second Edition,2007.

Subject Title	Software Engineering	Semester	V
Subject Code	14U5ITE02	Specialization	NA
Type	Elective:I	L:T:P:C	5

Objectives
1. Introduce software engineering basics
2. To Learn Cost Estimation, Design notations and Software testing.

Unit	Syllabus Contents	Number of Sessions
I	Introduction to Software Engineering: Definitions – Size Factors – Quality and Productivity Factors. Planning a Software Project: Planning the Development Process – Planning an Organizational Structure.	12
II	Software cost Factors – Software Cost Estimation Techniques –Staffing- Level Estimation – Estimating Software Estimation Costs.	12
III	Software Requirements Definition: The Software Requirements specification – Formal Specification Techniques. Software Design: Fundamental Design Concepts – Modules and Modularization Criteria.	12
IV	Design Notations – Design Techniques. Implementation Issues: Structured Coding Techniques – Coding Style – Standards and Guidelines – Documentation Guidelines.	12
V	Verification and Validation Techniques: Quality Assurance – Walkthroughs and Inspections – Unit Testing and Debugging – System Testing. Software Maintenance: Enhancing Maintainability during Development – Managerial Aspects of Software Maintenance – Configuration Management.	12

Learning Resources	
Text Books	1. Richard Fairley, "Software Engineering Concepts, TMH 2007.
Reference Books	1. Eve Anderson, Philip Greenspun, Andrew Grumet, "Software Engineering for Internet Applications", PHI 2006. 2. Jeff Tian, "Software Quality Engineering" Student edition, 2006, Wiley India.
Web Sites / Links	1. www.softwareengineerinsider.com/articles/what-is-software-engineering.html 2. https://www.udemy.com/courses/development/software-engineering

Content beyond the syllabus:
1. Software Development Life Cycle
2. Learn about SRS (Software Requirement Specification)
3. Study about importance of testing with software engineering

Subject Title	Software Quality Assurance	Semester	V
Subject Code	14U5ITE03	Specialization	NA
Type	Elective:I	L:T:P:C	5

Objectives
1. Introduce software engineering basics
2. To Learn Cost Estimation, Design notations and Software testing.

Unit	Syllabus Contents	Number of Sessions
I	Fundamentals of software quality assurance : The Role of SQA – SQA Plan – SQA considerations – SQA people – Quality Management – Software Configuration Management.	12
II	Managing Software Quality: Managing Software Organizations – Managing Software Quality – Defect Prevention – Software Quality Assurance Management	12
III	Software Quality Assurance Metrics: Software Quality – Total Quality Management (TQM) –Quality Metrics – Software Quality Metrics Analysis	12
IV	Software Quality Program: Software Quality Program Concepts – Establishment of a Software Quality Program–Software Quality Assurance Planning – An Overview – Purpose & Scope.	12
V	Software Quality Assurance Standardization : Software Standards–ISO 9000 Quality System Standards - Capability Maturity Model and the Role of SQA in Software Development Maturity–SEI CMM Level5 – Comparison of ISO 9000 Model with SEI's CMM.	12

Learning Resources	
Text Books	1. Mordechai Ben-Menachem / Garry S Marliss, "Software Quality", Vikas Publishing House, Pvt, Ltd., New Delhi. 2. Watts S Humphrey, " Managing the Software Process", Pearson Education Inc.
Reference Books	1. Gordon G Schulmeyer, "Handbook of Software Quality Assurance", Third edition, Artech House Publishers 2007. 2. Nina S Godbole, "Software Quality Assurance: Principles and Practice", Alpha Science International, Ltd, 2004
Web Sites / Links	1. www.tutorialspoint.com/software_testing/software_testing_qa_qc_testing.htm 2. www.sqa.net/

Subject Title	Client/Server Techniques	Semester	VI
Subject Code	14U6ITE04	Specialization	NA
Type	Elective:II	L:T:P:C	5

Objectives

1. To introduce the client/server computing basics.
2. To learn the Components of Client/Server Applications Concepts.

Unit	Syllabus Contents	Number of Sessions
I	Client/Server Computing – Advantages of Client / Server Computing – Technology Revolution – Connectivity – Ways to improve Performance – How to reduce network Traffic.	12
II	Components of Client/Server Applications – The Client: Role of a Client – Client Services – Request for Service. Components of Client/Server Applications – The Server: The Role of a Server – Server Functionality in Detail – The Network Operating System – What are the Available Platforms – The Server Operating system.	12
III	Components of Client/Server Applications – Connectivity: Open System Interconnect –Communications Interface Technology – Interprocess communication – WAN Technologies.	12
IV	Components of Client/Server Applications–Software: Factors Driving demand for application software development – Rising Technology Staff costs – Need to improve Technology –Need for Common Interface across Platforms – Client/Server System Development Methodology. Components of Client/Server Applications–Hardware: Hardware /Network Acquisition – PC-Level Processing Units – Machintosh, notebooks, Pen – UNIX Workstation – x-terminals – Disk, Tape, Optical Disks, NIC and UPS.	12
V	Components of Client/Server applications–Service and Support: System Administration. The Future of Client/Server Computing: Enabling Technologies – Transformational Systems.	12

	Learning Resources
Text Books	1. Patrick Smith, Steve Guenferich "CLIENT/SERVER COMPUTING", 2nd edition, PHI.
Reference Books	1. Dawna Travis Dewire,"Client/Server computing",Tata Mcgraw Hill,2009. 2. Jafferey D.Schank,"Novell's guide to client server Application and Architecture" 3rd Edition,BpB Publications ,2005. 3. Robert Orfali, Dan Harkey and Jeri Edwards,"Client/server Survival Guide"3rd Edition John Wiley and Sons Inc ,2009
Web Sites / Links	1. http://www.ayton.id.au/gary/it/Delphi/C_CSMid1.htm 2. https://en.wikipedia.org/wiki/Client%E2%80%93server_model 3. http://www.jwrider.com/lib/clientserver.htm

Subject Title	C# Programming	Semester	VI
Subject Code	14U6ITE05	Specialization	NA
Type	Elective: II	L:T:P:C	6 : 0 : 0 : 3

Objectives
   2. To learn about the programming in the field of C# that which are used in software development

Unit	Syllabus Contents	Number of Sessions
I	Introducing C# - Understanding .Net: The C# environment – Overview of C# - Literals, Variables and Data Types – Operators and Expressions.	12
II	Decision Making, Branching and Looping – if, if…else, switch, …? : operators, while, do, for, foreach and jump in loops, Methods in C# - declaring methods, the main method, invoking methods, nesting methods, method parameters, pass by value and pass by reference, output parameters, Variable argument lists – Overloading methods.	12
III	Arrays – Creating an array, Variable size arrays, Array list class – Manipulating Strings – Structures, Nested Structures – Enumerations, Initialization, base types and type conversion.	12
IV	Arrays – Creating an array, Variable size arrays, Array list class – Manipulating Strings – Structures, Nested Structures – Enumerations, Initialization, base types and type conversion.	12
V	Delegates – Declaration Methods, Initialization and Invocation, Multicast delegates, I/O operations – Console Input / Output, Formatting, Errors and Exceptions, Type of Errors – Exceptions – Exception for debugging.	12
Learning Resources		
Text Books	E. Balagurusamy, Programming in C#, Tata Mc-Graw Hill Publishing Company, New Delhi, 2002.	
Reference Books	1. Selvi, T. A Text book on C# : A Systematic approach to object oriented programming, Pearson Education, Delhi, 2003. 2. Lippman, C# Primer, 3rd Edition, Pearson Education, Delhi, 2002. 3. Liberty, J. Programming C#, Second Edition, O'Reilly & Associates Inc., California, 2002. 54 5. Albahari, B. Prayton, P. and Marill, B. C# Essentials, O'Reilly & Associates Inc.,California, 2002	
Web Sites / Links	1. www.csharp-station.com 2. www.completecsharp**tutorial**.com	

Content beyond the syllabus:
   1. Scope of C#
   2. Advantages and disadvantages of C#
   3. Practice of applications using C#

Subject Title	Software Testing	Semester	VI
Subject Code	14U6ITE06	Specialization	NA
Type	Elective:II	L:T:P:C	6 : 0 : 0 : 3

Objectives
1. To introduce the Software Testing basics.
2. Learn about various kind of software testing methods

Unit	Syllabus Contents	Number of Sessions
I	Building Software Testing Strategy-Software Testing Design Techniques – Software Testing Tools and Selection of Test Automation Products- Software Testing Lifecycle and Software Testing Process.	12
II	Testing Effort Estimation and Test Planning- Software Test Effort Estimation Technique-Pre-Development Testing Requirements and Design Phase – Best Practices in Program Phase Unit, System and Integration Testing.	12
III	A Case Study on Acceptance Testing – Implementation an Effective Test Management Process-Building an Effective Test Organization – Performance Issues and Optimization Techniques.	12
IV	Choosing a Load Testing Strategy-Dodging the Bullets-Validating Mission-Critical Server Software for Reliability-Probing the Blind Spot-Testing in today's Business and Usability.	12
V	Testing of Web-Based Applications-Testing of Embedded Software System used in Aerospace Applications- Testing Application for Security-Testing Metrices, Best Practices and Benchmarks.	12

Learning Resources	
Text Books	1. Renu Rajani and Pradeep Oak,"Software Testing Effective Methods, Tools & Techniques" Tata McGraw-Hill,9th Reprint 2009.
Reference Books	1. Srinivasan Desikan & Gopalaswamy Ramesh, "Software Testing Principles and Practices" Pearson Education, Sixth Impression, 2008.
Web Sites / Links	1. https://en.wikipedia.org/wiki/**Software_testing** 2. www.guru99.com/**testing-methodology**.html 3. www.guru99.com/**testing-methodology**.html

Content beyond the Syllabus:
1. About Silk Test software
2. Study about manual testing and automated testing
3. Learn about ad hoc testing for real time projects

Subject Title	Object Oriented Analysis And Design	Semester	VI
Subject Code	14U6ITE07	Specialization	NA
Type	Elective:III	L:T:P:C	6 : 0 : 0 : 3

Objectives

- To develop background knowledge as well as core expertise in object oriented system.
- To provide the importance of the software design process.
- To assess the unified process and Unified Modeling Language

Unit	Syllabus Contents	Number of Sessions
I	Object model – Elements – Class and object – Nature of object/class – Relationship among objects – Relationship among classes – Quality classes and objects. Classification and Process - Classification – classical categorization –Conceptual clustering	11
II	Prototype theory – Analysis and design – Activities – Classical approaches – First principles –The Micro development process – The Macro Development process. UML Notations – UML model – Introduction –Use case – Usage – Class diagrams – Perspectives	11
III	Perspectives – Associations – Attributes – Operations – CRC cards – Usage – Interaction diagrams – Sequence diagrams – Collaboration diagrams – Package diagrams – Concurrent state diagram – Activity diagram – Decomposing and activity – Domain model – Specification model – System design – Detailed design – Coding	11
IV	Object Oriented model traditional techniques - Current techniques - Approach to identify attribute – Service – Method. Behaviour Specifications – Static behaviour specification techniques Control – Documenting control.	12
V	Documenting static behaviour - Dynamic behaviour identification - Specification techniques - Documenting - Event specifications - Identifying relationships.	11

Learning Resources	
Text Books	1. Ali Bahrami"Object Oriented System Development",Tata McGraw hill Publications.
Reference Books	1. Martin Fowler, Kendall Scott, "UML Distilled - Applying the standard object modeling language", Addison Wesley, 1997.

	2. Richard C Lee, William M Tepfenhart, "UML and C++ - A practical guide to object oriented development", PH, 1997. 3. Grady Booch, "Object Oriented Analysis and Design with applications" II Edition Addison Wesley, 1994. 4. James Martin & James J. Odell, "Object Oriented Methods - A foundation", Prentice Hall, 1997.
Web Sites / Links	1. http://www.edutechlearners.com/ 2. www.uml-diagrams.org

Content beyond the syllabus:

1. Scope of OOAD
2. Advantages and disadvantages of OOAD in software development
3. Practice of applications using OOAD

Subject Title	Mobile Computing	Semester	VI
Subject Code	14U6ITE08	Specialization	NA
Type	Elective:III	L:T:P:C	6 : 0 : 0 : 3

Objectives

- To develop background knowledge about mobile computing.
- To provide the importance of transmission of data
- To learn about mobile communication

Unit	Syllabus Contents	Number of Sessions
I	Introduction - Introduction to Telephone Systems - Mobile communication: Need for mobile communication - Requirements of mobile communication – History of mobile communication - Introduction to Cellular Mobile Communication.	12
II	Mobile Communication Standards - Mobility Management: Handoff Techniques – Handoff Detection and Assignment – Types of Handoffs – Radio Link Transfer – Roaming Management - Frequency Management - Cordless Mobile Communication Systems.	12
III	Mobile Computing: History of data Networks - Classification of Mobile data networks - CDPD System. Satellites in Mobile Communication - Global Mobile Communication – Mobile Internet - Wireless Network Security - Wireless Local Loop Architecture - Wireless Application Protocol.	12
IV	WCDMA Technology and Fibre Optic Microcellular Mobile Communication – Ad Hoc Network and Bluetooth Technology - Intelligence Mobile Communication System - Fourth Generation Mobile Communication Systems.	12
V	Mobile network layer: Mobile IP – Dynamic host configuration protocol – Mobile Ad-Hoc networks. Mobile transport layer: Traditional TCP – Classical TCP Improvement – TCP over 2.5/3G Wireless networks – Performance enhancing proxies – Support for Mobility: File Systems – World Wide Web.	12

Learning Resources	
Text Books	1. T.G. Palanivelu & R.Nakkeeran, "Wireless and Mobile Communication", PHI Learning Private Limited, 2009. 2. Jochen Schiller, "Mobile Communications", Pearson Education, Second Edition , 2009.
Reference	1. William Stallings, "Wireless Communications and Networks", Pearson

Books	Education, 2002.
	2. Asoke K Talukder, "Mobile Computing: Technology, Applications, and Service Creation", Tata McGraw-Hill Communications Engineering, 2009
Web Sites / Links	1. www.tutorialspoint.com/mobile_computing/
	2. https://en.wikipedia.org/wiki/Mobile_computing

Content beyond the syllabus:
1. Hardware includes mobile devices or device components. Mobile software deals with the characteristics and requirements of mobile applications.
2. Advantages and disadvantages of mobile computing
3. Practice of applications using mobile computing

Subject Title	Wireless Technology	Semester	VI
Subject Code	14U6ITE09	Specialization	NA
Type	Elective:III	L:T:P:C	6 : 0 : 0 : 3

Objectives

- To develop background knowledge about wireless technology.
- To provide the importance of transmission of data
- To learn about wireless network

Unit	Syllabus Contents	Number of Sessions
I	Characteristics of the Wireless Medium –Introduction –Radio Propagation Mechanisms –Path Loss Modeling and Signal Coverage –Channel Measurement and Modeling Techniques –Simulation of the radio Channel – What is db.Applied Wireless Transmission Techniques. Short distance Base Band –UWB Pulse –carrier modulated –Digital Cellular Transmissions– Spread spectrum Transmissions.High speed modems for spread spectrum Technology coding Techniques for wireless Transmissions.	12
II	Wireless Medium Access Alternatives –Fixed Assignment Access for Voice-Oriented Networks. Random access for data oriented Networks -Integration of Voice and Data Traffic. Introduction to Wireless Networks – Wireless Network Topologies –Cellular Topology -Cell fundamentals -Capacity expansion techniques –Network Planning for CDMA Systems.	12
III	Mobility Management –Radio Resources and Power Management –Security in Wireless Networks GSM and TDMA Technology -Introduction to GSM – Mechanisms to support a mobile environment –communications in the infrastructure.	12
IV	CDMA technology –Reference Architecture –IMT 2000 -Mobile Data Networks –Data oriented CDPD Network –GPRS and Higher data rates -SMS in GSM –Mobile Application Protocols.	12
V	IEEE 802.11 WLAN –Physical layer –MAC sub layer –MAC Management Sub layer -Adhoc Networking –IEEE 802.15 –Home RF –Bluetooth – Wireless Geo location –Wireless Geo location System Architecture.	12

Learning Resources	
Text Books	1. Kaveh Pahlavan, Prashant Krishnamurthy "Principles of Wireless Networks", Pearson Education, Delhi, 2002.
Reference Books	1. Theodore S.Rappaport, "Wireless Communications :Principles and Practice", Pearson Education, Delhi, 2002. 2. William Stallings, "Wireless Communications and Networks", Pearson Education,

	Delhi, 2002. 3. Martyn Mallick, "Mobile and Wireless Design Essentials", Wiley, 2003.
Web Sites / Links	*1.* www.engineersgarage.com/articles/**wireless**_communication*2.* 2. www.slideshare.net/RashmiJoaa/three-types-of-**wireless-technology**

Content beyond the syllabus:
1. The term is commonly used in the telecommunications industry
2. Advantages and disadvantages of Wireless technology
3. Applications of Wireless Network.