

# **SHIVAJI UNIVERSITY, KOLHAPUR.**



**B**

**Accredited By NAAC**

**2009**

**Revised Syllabus For**

**B.Sc Part-III**

**Computer Science**

**Semester V and VI**

**Syllabus to be implemented from June 2012 onwards.**

**B.Sc.- III (Computer Science) Syllabus**

**New/Revised Syllabus For**

**Bachelor of Science Part III**

**Syllabus to be implemented from June 2012 onwards**

**1. TITLE : Subject—B.Sc. (COMPUTER SCIENCE)**

**Optional/Compulsory/Additional/IDS under the Faculty of Science**

**Semester - V**

**Paper - IX: Data Communication**

**Paper – X: Visual Basic .NET Programming- I**

**Paper –XI: Linux Operating System**

**PAPER –XII: E-Commerce**

**Semester - VI**

**Paper - XIII: Network Technology**

**Paper – XIV: Visual Basic .NET Programming- II**

**Paper –XV: Advanced Linux Applications**

**PAPER –XVI: Web Technology**

**2. YEAR OF IMPLEMENTATION: New/Revised Syllabi will be implemented from June 2012 Onwards.**

### 3. STRUCTURE OF COURSE- -----

#### THIRD YEAR (SEMESTER V) (NO.OF PAPERS 04)

Sr.No.	Subjects/Papers	Theory	Internal	Total Marks
1.	Data communication	40	10	50
2.	VB .Net Programming Part-I	40	10	50
3.	Linux Operating System	40	10	50
4.	E-commerce	40	10	50
	<b>Total</b>	160	40	200

#### THIRD YEAR (SEMESTER VI) (NO.OF PAPERS 04)

Sr.No.	Subjects/Papers	Theory	Internal	Total Marks
1.	Network Technology	40	10	50
2.	VB .Net Programming Part-II	40	10	50
3.	Advanced Linux Applications	40	10	50
4.	Web Technology	40	10	50
	<b>Total</b>	160	40	200

**4. SCHEME OF TEACHING AND EXAMINATION:-  
THIRD YEAR / SEMESTER – V**

Scheme of Teaching and Examination

Sr. No.	Subject/Paper	Teaching Scheme (Hrs/Week)				Examination Scheme (Marks)		
		L	T	P	Total	Theory	Term Work	Total
1	Data communication		3	5	8	40	10	50
2	VB .Net Programming Part-I		3	5	8	40	10	50
3	Linux Operating System		3	5	8	40	10	50
4	E-commerce		3	5	8	40	10	50
	Total		12	20	32	160	40	200

\* a) Theory: Three lectures per theory course per week.

b) Practicals: Five periods (4 hours) per week per batch of 10 students.

### THIRD YEAR / SEMESTER – VI

#### Scheme of Teaching and Examination

Sr. No.	Subject/Paper	Teaching Scheme (Hrs/Week)				Examination Scheme (Marks)		
		L	T	P	Total	Theory	Term Work	Total
1	Network Technology		3	5	8	40	10	50
2	VB .Net Programming Part-I		3	5	8	40	10	50
3	Advanced Linux Applications		3	5	8	40	10	50
4	Web Technology		3	5	8	40	10	50
	Total		12	20	32	160	40	200

\* a) Theory: Three lectures per theory course per week.

b) Practicals: Five periods (4 hours) per week per batch of 10 students.

#### 5. SCHEME OF EXAMINATION :-

- The Theory examination shall be conducted at the end of each semester.
- The Theory paper shall carry 40 Marks.
- There will be 10 internal marks per paper per semester
- The practical examination shall be conducted at the end of each year.
- The Practical paper shall carry 50 marks and project work shall carry 100 marks out of which 20 marks are reserved for industrial tour.
- The evaluation of the performance of the students in theory shall be on the basis of examination.

**6. STANDARD OF PASSING:-**

a) A student will have to secure 40% of marks in Theory, Internal and Practical examination separately in order to pass in those heads of passing. The student will have to score 16 marks out of 40 and 4 Marks out of 10 for each paper.

b) Internal Examination will be compulsory for all students which includes There will be one seminar / tutorial of 10 marks each in Fifth semester and sixth semester for each paper. If the student is absent/fail in internal examination then he/she will have to clear the internal examination in subsequent Attempts in following semester.

**7. COMMON NATURE OF QUESTION FOR THEORY PAPER MENTIONED SPERATELY:**

**8. EQUIVALENCE IN ACCORDANCE WITH TITLES AND CONTENTS OF PAPERS**

**B.Sc.-III Sem V**

<b>Sr.No.</b>	<b>Title of Old Paper</b>	<b>Title of New Paper</b>
<b>1.</b>	Network Technology	Data Communication
<b>2.</b>	VB .Net Programming	VB .Net Programming Part-I
<b>3.</b>	Linux Operating System	Linux Operating System
<b>4.</b>	E-commerce and Web Technology	E-commerce

**B.Sc.-III Sem VI**

<b>Sr.No.</b>	<b>Title of Old Paper</b>	<b>Title of New Paper</b>
<b>1.</b>	Network Technology	Network Technology
<b>2.</b>	VB .Net Programming	VB .Net Programming Part-II
<b>3.</b>	Linux Operating System	Advanced Linux Applications
<b>4.</b>	E-commerce and Web Technology	Web Technology

B.Sc.- III (Computer Science) Syllabus  
Bachelor of Science (Computer Science) Part III

**Semester - V**

**Paper - IX: Data Communication**

**Paper – X: Visual Basic .NET Programming- I**

**Paper –XI: Linux Operating System**

**Paper –XII: E-Commerce**

**Semester - VI**

**Paper - XIII: Network Technology**

**Paper – XIV: Visual Basic .NET Programming- II**

**Paper –XV: Advanced Linux Applications**

**Paper –XVI: Web Technology**

**Semester – V**

**Paper IX: Data Communication**

**Unit 1: Introduction to computer network (10)**

Objective, definition, component, Uses of computer network for companies, Classification of computers on: Transmission technology, scale (LAN, WAN, MAN and Wireless network), Peer to peer network, Client/Server network, Host terminal network, network, Virtual private network.

**Unit 2: Data Communication (10)**

Definition, Fundamental characteristics, Components of data Communication: message, sender, receiver, transmission medium, protocol. Transmission impairments: - Delay distortion, Dispersion, Noise. Data communication modes: Serial and Parallel, Simplex, Half duplex and full duplex, Synchronous and asynchronous transmission.

**Unit 3:- Network component (12)**

Physical Structure of Network: Type of connection (point to point and multipoint), physical topology (mesh, star, Bus, ring, Hybrid), Connectionless and connection oriented Services, Component: Guided Media (twisted pair cable, co-axial cable, fiber-optic), Hubs, Router, Modem, Dial up modem, ISDN Modem, DSL cable Modem.

#### **Unit 4:- Introduction to Windows Server 2008**

**(13)**

Introduction to n/w operating system, features and function of network operating system, Introduction to administration accounts and resources. Multimedia:-Introduction. The Windows Server 2008 environment: Logging on to Windows Server 2008. Using the Run as features for administration. Installing and configuring administrative tools, creating and organizing units. Managing user and computer accounts:- Creating user and computer accounts, modifying properties of use and computer accounts.

#### **Reference books-**

- 1) Data communication and Networking- Behrouz Forouzan
- 2) Computer Network- Tanenbaum
- 3) Computer network – black
- 4) Microsoft Windows 2008 server—TATA MC Graw Hill

#### **Practical Experiments:**

1. Managing user and computer accounts:-
  - Creating user and computer accounts
  - Modifying user and computer account properties.
2. Creating and managing group:
  - Creating global and domain local group
  - Managing group membership
  - Managing default group
3. Use of multimedia and its Simple application
4. Installing and configuring administrative tool
5. Create user account templates



## **Paper – X: Visual Basic .NET Programming- I**

### **Unit 1: Introduction to Visual Programming (10)**

Event driven programming, History of VB.Net, Features of VB.Net, Architecture of VB.Net [.Net server, framework, services etc.], .Net Framework: framework components, classes, CLR, VB.Net IDE

### **Unit 2: Variables and control statements (10)**

VB.Net: Variables, keywords, constants, data types, conditional statements, looping statements, case control statements.

### **Unit 3: Activex Controls (13)**

Activex control, form, label, link label, button, group box, textbox, list box, combo box, radio button, timer, dialog boxes, picture box, data grid, tool bar, menu bar.

### **Unit 4. Working with Classes (12)**

Classes, object, properties and methods, Constructor and its types, Inheritance- single, multiple, multilevel inheritance.

Polymorphism- method overloading, overriding, operator overloading (+, -)

Assembly, Namespace.

### **Reference Books :**

1. Visual Basic.NET Black Book – Steve Holzner
2. Visual Basic.NET Programming Bible – Bill Evjen
3. Pro ADO.NET with VB.NET – Sahil Mailk and Paul Dickinson

### **Practical Experiments:**

1. Basic study of Visual Studio.NET IDE
2. Compiling Visual Basic.NET Program
3. Control Structures: Conditional, Branching and Looping
4. Based on simple console applications on classes
5. Creating Forms using Basic controls

## **Paper –XI: Linux Operating System**

### **Unit-1 : Introduction**

**(10)**

Linux history and development system , Linux and GNU , Kernel and shell , Kernel shell relation ship , Features of Linux, Login , Logout , Remote login, GNU( General Purpose Utilities) Clear , script , cal , who ,bc, wc etc

### **Unit-2 Handling file and directories**

**(10)**

File , file types , file system tree , system directories, Basic file handling with cat , cp , mv, rm ,lp , listing basic file attributes, directory management commands – cd , mkdir, rmdir. Use of basic filters – head, tail , sort, cut, paste, tr , grep with expressions.Change file access permissions with chmod command

### **Unit-3 shell and process**

**(10)**

Pattern matching , use of back slash , Redirection- input , output and error , Command linking – use of pipe , concept of pipeline , use of tee in pipeline , command substitution , shell variable, Steps carried out by the shell for processing a command , process ,process management – ps , kill, background processing, no hang up, job scheduling using at command

### **Unit-4 VI editor and simple shell programming**

**(10)**

Use and features of vi, modes of operations – a) command mode – text management , Repeat factor. Insert mode –insert, append , replace text, Exmode - Saving the text , Global substitution etc. Writing and running the Shell scripts , read , echo , if , case, loops-for, while ,until , File tests , exit etc.

### **Reference books**

1. Linux commands – Instant Reference by Bryan PF affenberge
2. Unix Concept and applications – Sumitabha Das
3. RedHalt Linux 718 – Bill Ball , David Pitts
4. Linux programming – Foreword By Alan Cox

## **List of Experiments**

1. Interacting with Linux – Login , Logout , Passwords, Use of General Purpose Utilities.
2. Handling files – Create , Copy , move , rename , delete and print files
3. Handling directories- Making new directories, changing directories, removing directories, copy, move files within one to another directory.
4. Listing file attributes , changing access permissions using chmod command
5. Listing files directories, use of redirection . pipe , tee , command substitution
6. Process management commands – ps , listing system processes , kill etc
7. Creating and saving files using Vi editor, text management , append ,replace , insert text in existing files , search and replace etc.
8. filtering files using grep, use of head , tail , cut and paste for creating new files etc, creating and running simple shell scripts.

## **PAPER –XII: E-Commerce**

### **Unit 1: E-commerce**

**(12)**

Meaning, objective, challenges and opportunities, basic models of E-commerce – Business to business, business to customer, customer to business, Electronic Data Interchange: Concept of EDI, requirements, benefits, components of EDI and its applications.

### **Unit 2: Electronic payment system**

**(10)**

Overview of electronic payment technology, electronic or digital cash, electronic checks, online credit card-based systems, consumer legal and business issues.

### **Unit 3: E-security**

**(10)**

Security issues, security threats, security breach, access control, firewall and proxy services, security issues, digital signature, electronic document, cryptography- Symmetric and Asymmetric.

### **Unit 4: Designing web page**

**(10)**

Introduction, www, Architecture of World Wide Web, steps in web development, naming scheme for HTML DOCUMENT, TIPS For Designing Web Page. HTML Elements –basic tags, <img>, <frameset>, <embed>, <bgsound>,<Form tag>, INPUT, SELECT, TEXTAREA, etc., Introduction to cascading style sheet (CSS),cross browser testing.

### **Reference books**

1. E-commerce - Deepak Goel S. Chand
2. E-commerce, Business on the Net Kamlesh Agarwal McMillan
3. E-commerce, The Cutting Edge of Business Bajaj and Nag - Tata McGraw Hill
4. E-Commerce by S. Jaiswal – Galgotia Pub.
5. HTML4 Unleashed – Rick Dranell
6. Electronic Commerce - Ravi Kalakota and Andrew Whinston PEARSONS
7. Beginning E-commerce - Matthew Reynolds Shroff Publishers & Distributors

### **Practical Experiments**

1. HTML programs for img, frameset, embed, bgsound
2. HTML programs for Input, Select, Text area
3. HTML programs for client side image mapping.
4. HTML program to play audio and video on web page
5. HTML program for demonstrate cross browser testing.

**Semester - VI**  
**Paper XIII: Network Technology**

**Unit 1:-Network software and network standardization: (8)**

Introduction, Network software: Protocol hierarchy, Design issue for the layer, service primitives.

Network Standardization: - Telecommunication world (Standard World, Internet standard word) Frames formats and standard:- Ethernet (802.2, 803.2), Wireless (802.11a, 802.11g)

**Unit 2:- OSI Model (13)**

Introduction – peer to peer processes, Layers in the OSI Model- introduction to Physical layer, Data link layer, Network layer, Transport Layer, Session Layer, Presentation, Application

**Unit 3:- TCP/IP (12)**

Transport Layer, Session Layer, Presentation, Application  
Introduction to TCP/IP model and its layers.

**Unit 4:- Introduction to Windows Server 2008 (14)**

Creating user accounts templates, managing user and computer accounts  
Active directory, Managing Groups:- Creating groups, Managing groups relation, Strategies for using group, using default group, features of NTFS file system.

**Reference books-**

- 1) Data communication and Networking- Behrouz Forouzan
- 2) Computer Network- Tanenbaum
- 3) Computer network – black
- 4) Microsoft Windows 2008 server—TATA MC Graw Hill
- 5) Computer network – Uyles Black

**Practical Experiments:**

1. Creating Active directory
2. Managing groups and relations
3. Demo of how to use default group.
4. Applying strategies for using group
5. Securing Windows Server 2008  
    Using the security configuration wizard  
    Configuring a group policy object for member server

## **Paper – XIV: Visual Basic .NET Programming- II**

### **Unit 1. Arrays and String**

**(08)**

Arrays: Working with Arrays, Redim and Preserve Statement, Rectangular array, Jagged Array, Array Class.,String: Manipulation of string, functions for comparison, concatenation, copy, replace, substring, length. Date functions: Dateadd(),DateDiff(),Datepart(),Datevalue(),Day(),month(),monthname(), year().

### **Unit 2. Exception Handling**

**(10)**

Errors-Types of errors, structured and unstructured exceptions., Unstructured Exception- on error Goto, Resume, Résumé Line, Resume next.

Structured Exception-Try-----Catch--- End Try, Try-----Catch----Finally---- End Try, Throw keyword. Tracing Errors: Breakpoints, watch window, quick watch window, autos.

### **Unit 3. File handling**

**(08)**

Classes-File stream Class, Stream Reader, Stream writer Class, Binary writer, Binary Reader Class, File Mode, Append, Create, CreateNew, open, File Access - Read, Write, ReadWrite.

### **Unit 4. ADO.NET**

**(14)**

Introduction to ADO.NET, Components and Features, Objects- Connection, Dataadapter, dataset, datatable, datarow, datacolumn, datareader, server explorer, binding controls to database,ADO .Net Programming

### **Reference Books :**

- 1) Visual Basic.NET Black Book – Steve Holzner
- 2) Visual Basic.NET Programming Bible – Bill Evjen
- 3) Pro ADO.NET with VB.NET – Sahil Mailk and Paul Dickinson
- 4) Beginning VB.NET- Wrox Publication

**Practical Experiments:**

1. Simple programs using array
2. Simple application using string handling functions
3. Program on Exception handling
4. File handling Program using Stream writer, reader Binary writer, Reader
5. Simple Applications using database
6. Report creation on Database
7. Demonstrate use of data grid.

**Paper –XV: Advanced Linux Applications****Unit-1 Advanced VI (10)**

Deleting and moving text ( d ,p, and P ) , yanking text (y) ,Filtering the text ( ! ) , , Ex mode –handling multiple files, inserting file and command outputs, named buffers, moving text from one file to another.

**Unit-2 Sed and gawk applications (10)**

Sed- syntax ,line addressing , multiple instructions ( -e . -f ) , context addressing , internal commands used by sed – i , a , d, a, p, r, q , w, s etc., gawk – syntax, field level operations , formatted outputs , use of variables and expressions, BEGIN and END section , built-in variables, arrays, built-in functions – system ,length , substr , split etc

**Unit-3 Advanced shell programming (10)**

Shell and subshell, command line arguments, Exporting shell variables, arrays , shell functions , writing data entry script to create data files , data validation before storing on hard disk.

**Unit- 4 System Administration (10)**

Login with root, su , communicate with users-wall ,news , booting and shutdown process , managing disk space – df , du,ulimit, find , backup-cpio , printer management-lpsched ,lpstat, lpadmin, lpmove, reject, disable etc.

## **Reference books-**

1. Linux commands – Instant Reference by Bryan PF Affenberge
2. Unix Concept and applications – Sumitabha Das
3. RedHalt Linux 718 – Bill Ball, David Pitts
4. Linux programming – Foreword By Alan Cox

## **Practical Experiments**

1. Using vi -Handling multiple file , copy paste , cut paste and filtering the text .
2. Filtering text using sed , sed instructions for supplied applications
3. Gawk programs for generating formatted reports
4. Shell scripts using command line arguments, used defined functions ,  
data validation and creating data files



## **PAPER –XVI: Web Technology**

### **Unit-1 Introduction to JAVA script (10)**

Introduction, requirement of script, features of Java Script, Java Script-Data types, variables, operators use<script> and document. Write, conditional and control statements(if-else, switch, looping), Build-in and user-defined functions, Build-in objects.

### **Unit-2 Client side scripting (10)**

Client side Vs Server side scripting, Document object Model(object, its properties and methods), Events and event handlers, validations.

### **Unit-3 VB Script-Server side scripting (10)**

Introduction, VB scripts-Variables, data types, operators. conditional and looping statements, procedures and its types

### **Unit-4 ASP (10)**

ASP advantages, built in object in ASP, GET and POST methods,

#### **Reference Books:-**

1. Web Enabled Commercial Application Development using HTML,DHTML, java Script,Perl-Ivan Bayross.
2. Asp and Beginners Guide –Dava merces, TMH.
3. Active server pages 3.0 –BY WROX Publications.
4. Java Script –Danesh.

#### **Practical Experiment:-**

1. Simple JavaScript programs based on control structures.
2. JavaScript programs based on looping structures.
3. Write a JavaScript program to validate e-mail address.
4. Write an ASP program to display client side and server side date, time, day month and weekday.
5. Write an ASP program to display number of times certain web page is visited.

**Practical Paper IV (Based on Paper IX, X, XIII, XIV) - 50 marks**

**Practical Paper V( Based on Paper XI,XII,XV,XVI) - 50 marks**

**Practical Paper-VI Project work Project work**

- **NATURE OF QUESTION PAPER AND SCHEME OF MARKING :-  
NATURE OF PRACTICAL QUESTION PAPER:**

1. The practical question paper IV and V for B.Sc.-III(computer science) will be of maximum 50 marks each.
2. The practical paper IV having four questions out of which two questions are based on Paper –IX (Sem.-V) Paper-XIII (Sem.-VI) and Two questions are based on Paper X (Sem.-V), Paper-XIV (Sem.-VI)
3. The practical paper V having Four questions out of which Two questions are based on Paper – XI (Sem.-V), Paper XV (Sem.-VI) and Two questions are based on Paper-XII (Sem.-V), Paper-XVI (Sem.-VI)
4. The Student has to attempt any TWO questions out of FOUR questions. Each question carries 20 marks.
5. 10 marks are for Viva and certified Journal.
6. The student appearing for the practical examination is expected to write paper work for TWO questions. Paper work is compulsory and it includes problem analysis and algorithm, source code and tracing.
7. It is expected to complete the paper work within 90 minutes.
8. The duration of practical will be 4 hours.
9. Practical Paper VI is Project work of 100 marks.

## **Practical Paper VI : Project work - 100 marks**

### **Project work Guidelines:**

1. Institute is expected to conduct educational visit to any computerized industry and students are supposed to submit the report based on same.
2. Software development project is to be carried out by the candidate in actual consumer environment taking some real life problem.
3. The candidate is supposed to document and submit the project work according to norms of software engineering i.e. the project document should contain Introduction, detailed design, sample testing and conclusion
4. Project will have internal guide to supervise and monitor the progress of the same. The internal guide may assign the project to the student or within the group of student (maximum 2 candidates in group) depending upon the complexity of the problem. Preferably using access/oracle/sql server as a back end and VB.Net as front end tool.
5. There will be online demonstration of project work in the presence of the external examiner and it will be considered for the evaluation.
6. The mark distribution for Practical paper VI will be as follows

Total marks	100 marks
Educational visit	20 marks
Project documentation	40 marks
On-line Presentation	40 marks