

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED**Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)****B.Sc.(SE) Second Year (Semester-3)**

Code No.	Subject Title	Teaching Period/ Week		Maximum Marks A	Internal Test Marks B	Total Marks (A+B)	Duration of Exam Hours
		Theory	Practical				
B.Sc.(SE)S3.1	Web Technology	4	-	80	20	100	3
B.Sc.(SE)S3.2	VISUAL BASIC 6.0	4	-	80	20	100	3
B.Sc.(SE)S3.3	Programming with C++	4	-	80	20	100	3
B.Sc.(SE)S3.4	Computer Networks	4	-	80	20	100	3
B.Sc.(SE)S3.5	Software Engineering	4	-	80	20	100	3
B.Sc.(SE)S3.PR1	Comp Lab1 Web Technology	-	3	-	-	50	3
B.Sc.(SE)S3.PR2	Comp Lab2 VISUAL BASIC 6.0	-	3	-	-	50	3
B.Sc.(SE)S3.PR3	Comp Lab3 Programming with C++	-	3	-	-	50	3

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED**Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)****B.Sc.(SE) Second Year (Semester-4)**

Code No.	Subject Title	Teaching Period/ Week		Maximum Marks A	Internal Test Marks B	Total Marks (A+B)	Duration of Exam Hours
		Theory	Practical				
B.Sc.(SE)S3.1	JAVA Programming	4	-	80	20	100	3
B.Sc.(SE)S3.2	Windows Programming through VC++	4	-	80	20	100	3
B.Sc.(SE)S3.3	MySQL	4	-	80	20	100	3
B.Sc.(SE)S3.4	Compiler Designing	4	-	80	20	100	3
B.Sc.(SE)S3.5	Cyber Security	4	-	80	20	100	3
B.Sc.(SE)S3.PR1	Comp Lab1 JAVA Programming	-	3	-	-	50	3
B.Sc.(SE)S3.PR2	Comp Lab2 Windows Programming through VC++	-	3	-	-	50	3
B.Sc.(SE)S3.PR3	Comp Lab3 MySQL	-	3	-	-	50	3

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S3.1 Web Technology

(Total Lectures:43)

80Marks

- | | |
|--|--------------|
| 1. Web Publishing | 5 Hrs |
| 1.1 Basic HTML Concepts | |
| 1.2 HTML: Structured Language | |
| 1.3 Overview of HTML | |
| 1.4 Web Browser | |
| 1.5 WWW | |
| 1.6 Web Server | |
| 1.7 The Phases of web site development | |
| 1.7.1 Implementation, Maintenance, Testing | |
| 1.8 What are Links or URLs | |
| 2. The Markup Tags | 8 Hrs |
| 2.1 HTML | |
| 2.2 HEAD | |
| 2.3 TITLE | |
| 2.3 BODY | |
| 2.4 Paragraphs | |
| 2.5 Lists | |
| 2.6 Formatted and Unformatted Text | |
| 2.7 Extended Quotations | |
| 2.8 Address | |
| 2.9 Horizontal Rules | |
| 2.10 Hyperlink | |
| 2.11 Font (Size, Color) | |
| 2.12 Image (Add, Alignments) | |
| 2.13 Table | |
| 2.14 Cell Spacing / Cell Padding | |
| 2.15 Frame Set | |
| 2.16 Form | |
| 3. Introduction to Dreamweaver MX | 3 Hrs |
| 3.1 The Dreamweaver Interface | |
| 3.2 Toolbars | |
| 3.3 Menus | |
| 3.4 Accessing Code | |
| 3.5 Building Styles Sheet | |

- 4. Designing Web Pages** **7 Hrs**
 - 4.1 Working with text
 - 4.2 Inserting Images
 - 4.2.1 Web Graphic Format GIF, JPEG, PNG
 - 4.2.2 Inline Images
 - 4.2.3 Background images, Horizontal Rules
 - 4.2.4 Banner Ads
 - 4.2.5 Rollover Images
 - 4.3 Establishing Web Links
 - 4.3.1 Understanding URLs
 - 4.3.2 Adding an E-Mail Link
 - 4.3.3 Navigating with Anchors
 - 4.4 Working with Divs and Layers
 - 4.4.1 Placing <div> tags
 - 4.4.2 Creating Layers
 - 4.4.3 Modifying a Layer
 - 4.5 Creating Lists
 - 4.5.1 Unordered Lists
 - 4.5.2 Ordered Lists
 - 4.5.3 Definition Lists
 - 4.5.4 Nested Lists

- 5. Setting up Tables** **3 Hrs**
 - 5.1 HTML Table Fundamentals
 - 5.2 Inserting Tables in Dreamweaver
 - 5.3 Modifying Tables
 - 5.4 Working with Table formats

- 6. Interactive Forms** **5 Hrs**
 - 6.1 How HTML forms work
 - 6.2 Inserting a form in Dreamweaver
 - 6.3 Using Text fields
 - 6.4 Providing Checkboxes and Radio Buttons
 - 6.5 Creating form lists and Menus
 - 6.6 Activating forms with buttons
 - 6.7 Using Hidden fields and File fields

- 7. Using Frames and Framesets** **4 Hrs**
 - 7.1 Frames and Framesets Basics
 - 7.2 Creating a Framesets and Frames
 - 7.3 Adding more frames
 - 7.4 Modifying a frame
 - 7.5 Targeting Frame Contents

8. Adding Multimedia Element

6 Hrs

- 8.1 Using Audio on Web Page
 - 8.1.1 Digital Audio File formats
 - 8.1.2 MIDI files
 - 8.1.3 Linking to Audio File
 - 8.1.4 Embedding Sounds and Music
- 8.2 Adding Video to Web Page
 - 8.2.1 Video on the Web
 - 8.2.2 The Streaming Media
 - 8.2.3 RealMedia
 - 8.2.4 QuickTime
 - 8.2.5 Windows Media
 - 8.2.6 Playing Videos

Reference Books

1. Dreamweaver MX 2004 BIBLE
2. WEB PUBLISHING BY MONICA D' SOUZA & JUDE D' SOUZA
3. COMPLETE REFERENCE - HTML - TOWELL

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S3.2 VISUAL BASIC 6.0

(Total Lectures:43)

80Marks

- | | |
|--|-------|
| 1. Beginning Visual Basic | 6Hrs |
| What is Visual Basic | |
| Features of Visual Basic | |
| The Visual Basic Philosophy | |
| The integrated development environment | |
| The anatomy of Form | |
| Project Types | |
| 2 Dealing With Data | 6Hrs |
| 2.1 Operators | |
| 2.2 Variables | |
| 2.3 Declaring Variables | |
| 2.4 Types Of Variables | |
| 2.5 Data types | |
| 2.6 Constants | |
| 2.7 Arrays :- | |
| 2.7.1 Declaring Arrays | |
| 2.7.2 Specifying Arrays | |
| 2.7.3 Multidimensional Arrays | |
| 2.7.4 Dynamic Arrays | |
| 2.7.5 Arrays of Arrays | |
| 3 Writing Code | 10Hrs |
| 3.1 Collections | |
| 3.2 Procedures | |
| 3.3 Subroutines | |
| 3.4 Functions | |
| 3.5 Calling Procedures | |
| 3.6 Object Browser | |
| 3.7 Creating Classes & Object | |
| 3.8 I/O Statements | |
| 3.9 Control Flow Statements | |
| 3.9.1 If—Then | |
| 3.9.2 If-then-else | |
| 3.9.3 Nested Control Statements | |
| 3.9.4 Select-Case | |

3.10	Loop Statements	
3.10.1	Do—Loop	
3.10.2	For—Next	
3.10.3	While-Wend	
3.11	Exit Statement	
4	Creating an Application Using Controls	10Hrs
4.1	What is on the toolbar	
4.2	Textbox Control	
4.3	Picture Box	
4.4	Image Box	
4.5	Label Box	
4.6	Frame	
4.7	List Box	
4.8	Option Button	
4.9	Combo Box	
4.10	Command Button	
4.11	Check Box	
4.12	The Drive , Directory, File List Controls	
4.13	The Line & Shape Control	
4.14	Scroll Box	
4.15	Data	
4.16	Timer	
5.	Multiple Document Interface & Menus	6Hrs
5.1	Why MDI Forms	
5.2	Features Of an MDI forms	
5.3	Loading MDI forms & child forms	
5.4	Creating an simple MDI forms	
5.5	Accessing MDI forms	
5.6	Creating MENUS	
5.7	POP-UP MENUS	
6.	DATA Access Controls	5Hrs
6.1	JET database Engine	
6.2	ADODC	
6.3	DAO Data Control	
6.4	ODBC Data Source Administrator	
6.5	DATA REPORT	

Reference Books

- 1] Programming with VB 6.0 –Mohammed Azam
- 2] Mastering VB 6.0
- 3] Beginning VB 6.0 –Peter Wrights

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S3.3 Programming with C++

(Total Lectures:42)

80Marks

- | | |
|--|--------------|
| 1. Introduction and basic concepts of C++
Procedure Oriented Programming.
Object Oriented Programming Paradigm.
Basic concepts of OOP's.
Benefits and Applications.
Structure of C++ program | 6Hrs |
| 2. Tokens ,Operators
Keywords, identifiers, data-types
operators in C++
Operator precedence and associativity | 4Hrs |
| 3. Functions in C++
Function, function prototype, default arguments,
Reference variable, call by reference, return by reference
Inline function, function overloading | 5Hrs |
| 4. Class and object
Specifying a class and object
Nesting of member function
Memory allocation for objects
Static data member, static function
Friend function
Returning objects | 10Hrs |
| 5. Constructor and destructor
Constructor
Types of constructor
Destructor | 5Hrs |
| 6. Inheritance and polymorphism
Types of inheritance
Virtual base class
Operator overloading (Unary and binary) | 8Hrs |

Virtual function and there rules
Pure virtual function
Abstract class
Pointer to object, This pointer

7. Input / Output Operation

6Hrs

Console I/O operation, formatted I/O, unformatted I/O
C++ classes for console I/O, C++ stream classes for file I/O
Opening and closing file, sequential and random access
Error handling during a file operation, command line arguments
Templates, template function, template class.

Reference Books:-

1. The C++ Complete Reference -TMH Publication
2. Object-Oriented Programming with C++ -E-Balgurusamy
3. Let us C++ -Yashwant kanetkar

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S3.4 Computer Networks

(Total Lectures:50)

80Marks

1. Introduction

7Hrs

- 1.1 Goals of computer Networks.
- 1.2 Network Hardware- LAN, MAN, WAN.
- 1.3 Introduction to Wireless Networks.
- 1.4 Network Software-Protocol Hierarchy, Design and Issues for Layer.
- 1.5 Synchronous and asynchronous transmission.

2. LAN Hardware

8Hrs

- 2.1 Network Interface Card.
- 2.2 Guided Transmission media
- 2.3 Unguided Transmission Media
- 2.4 Network Topologies- Bus, Ring, Star, Tree and other Topologies.
- 2.5 Networking Devices – Repeaters, Bridges, Routers, Gateways, Hub and Switch.

3. Network Standards and Network protocols

9Hrs.

Reference Models:

- 3.1.1 OSI reference model.
- 3.1.2 TCP/IP reference model.

Different Protocols: -- IP protocol, SMTP, PPP, FTP, HTTP, SNMP.

IP-addresses

Domain Name System.

4. Connection, Interfacing and Devices :

9 hrs.

- 4.1 Connection oriented and connectionless services
- 4.2 Serial and Parallel connections.
- 4.3 Half duplex and full duplex communication.
- 4.4 Connectors - D and RJ-45

5. Multiplexing and Switching

8Hrs

- 5.1 Concept of modulation and their application.
- 5.2 Multiplexing – Time division and Frequency division
- 5.3 Switching
 - Circuit Switching
 - Packet Switching
 - Message Switching.

6. Internet

9Hrs

- 6.1 Definition , Internet verses Intranet.
- 6.2 Internet Service Providers.
- 6.3 E-mail – Architecture and Services.
- 6.4 WWW-Client side and Server side.
- 6.5 URL, Messenger.

Books Recommended :

1. Andrew S. Tannenbaum, "Computer Networks", (Fourth Edition),
Prentice-Hall of India Pvt. Ltd, New Delhi.
2. Gerd E. Keiser", "Local Area Networks", Tata McGraw Hill Edition, New Delhi.
3. Peter Holdson, "Local Area Networks", (Third edition),
BPB publication, New Delhi.
- 4 Willim Stallings "Data and Computer Communications", (Fifth Edition),
Prentice-Hall of India Pvt. Ltd, New Delhi.

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S3.5 Software Engineering

(Total Lectures:43)

80Marks

1. The Product and the Process

- 1.1. Software
 - 1.1.1. Software Characteristics
 - 1.1.2. Software Applications
- 1.2. Software Myths
- 1.3. Software Engineering: A Layered Technology
- 1.4. The Software Process
- 1.5. Software Process Models
- 1.6. The Linear Sequential Model
- 1.7. The prototyping Model
- 1.8. Evolutionary Software Process Models
 - 1.8.1. Incremental Model
 - 1.8.2. Spiral Model

2. Project Management Concepts

- 2.1. The Management Spectrum
 - 2.1.1. The People
 - 2.1.2. The Product
 - 2.1.3. The Process
 - 2.1.4. The Project
- 2.2. People
 - 2.2.1. The Players
 - 2.2.2. Team Leaders
 - 2.2.3. The Software Team

3. Software process and Project Metrics

- 3.1. Measures Metrics and Indicators
- 3.2. Metrics in the process and project domains
- 3.3. Software Measurement
 - 3.3.1. Size-Oriented Metrics
 - 3.3.2. Function-Oriented Metrics
 - 3.3.3. Extended Function Point Metrics

4. Software Project Planning

- 4.1. Observations on Estimating
- 4.2. Project Planning Objectives
- 4.3. Software Scope
- 4.4. Resources
- 4.5. Software Project Estimation

5. Risk Analysis and Management

- 5.1. Software Risks
- 5.2. Risk Identification
- 5.3. Risk Projection

6. Software Quality Assurance

- 6.1. Quality Concepts
- 6.2. Software Quality Assurance
- 6.3. Software Reviews
- 6.4. Formal Technical Reviews

7. Software Testing Technique

- 7.1. Software Testing Fundamentals
- 7.2. White Box Testing
- 7.3. Basic Path Testing
- 7.4. Black Box Testing

8. Software Testing Strategies

- 8.1. A Strategic Approach to Software Testing
- 8.2. Unit Testing
- 8.3. Integration Testing
 - 8.3.1. Top-down Integration
 - 8.3.2. Bottom-up Integration

References:-

- 1) Software Engineering (Fifth Edition) By Roger S. Pressman

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S4.6 JAVA Programming

(Total Lectures:50)

80Marks

1. Introduction of Java

8 Hrs.

- 1.1 Java history, Java features
- 1.2 How Java Differs from C & C++
- 1.3 Java & Internet
- 1.4 Java Environment
- 1.5 Java virtual machine
- 1.6 Constant, Variables, Data types, Scope of Variable
- 1.7 Branching – if, if...else, Nested if...Else, Switch Statement
- 1.8 Looping – while, do while, for Statement

2. Classes, Objects & Methods

8 Hrs.

- 2.1 Introduction
- 2.2 Defining a Class, Field, Method Declaration, Creating Objects
- 2.3 Constructors
- 2.4 Method Overloading
- 2.5 Static Members
- 2.6 Method overriding
- 2.7 Final Variables & methods
- 2.8 Final classes
- 2.9 Finalizer Methods

3. Arrays, Strings and Vectors

5 Hrs.

- 3.1 Arrays
- 3.2 Strings
- 3.3 Vectors

4. Exception Handling

5 Hrs.

- 4.1 Types of Errors
- 4.2 Exceptions
- 4.3 Multiple Catch Statements
- 4.4 Using Finally Statement
- 4.5 Throwing Our Own Exceptions

- 5. Packages & Interfaces-Multiple Inheritance** **8Hrs.**
- 5.1 Introduction of Package
 - 5.2 Java API Packages
 - 5.3 Using System Packages
 - 5.4 Creating Packages, Accessing a Packages, Using a Package
 - 5.5 Defining Interfaces
 - 5.6 Extending Interfaces
 - 5.7 Implementing Interfaces
- 6. Multithreaded Programming** **7 Hrs.**
- 6.1 Introduction
 - 6.2 Creating Threads
 - 6.3 Extending the Thread Class
 - 6.4 Stopping & Blocking a Thread
 - 6.5 Life Cycle of Thread
 - 6.6 Thread Priorities
 - 6.7 Synchronization
- 7. APPLLET Programming** **9Hrs.**
- 7.1 Introduction
 - 7.2 How Applet differ from Applications
 - 7.3 Preparing to Write Applets
 - 7.4 Building Applet Code
 - 7.5 Applet Life Cycle
 - 7.6 Applet Tag
 - 7.7 Passing parameters to Applets
 - 7.8 Displaying Numerical values
 - 7.9 The Graphics Class
 - 7.10 Drawing Lines, Rectangles, Circles, Ellipses

Reference Books

1. "Programming With JAVA A Primer" Balagurusamy 3rd Edition
TATA McGraw HILL
2. "The Complete Reference JAVA 2" H. Schlidt.
3. Mastering JAVA 2 J2SE 1.4 John Zukowski BPB Publication.

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S4.7 Windows Programming through VC++

(Total Lectures:47)

80Marks

- | | |
|---|-------|
| 1. Introduction | 12Hrs |
| 1.1. Introduction and Features of VC++ | |
| 1.2. The Windows Programming Model | |
| 1.2.1. Messages | |
| 1.2.2. Windows Data Types | |
| 1.2.3. Windows programming SDK Style | |
| 1.3. MFC | |
| 1.3.1. Benefits of C++ & MFC | |
| 1.3.2. MFC Design Philosophy | |
| 1.3.3. Document/View Architecture | |
| 1.3.4. MFC Class Hierarchy | |
| 1.4. MFC Application | |
| 1.4.1. Application object | |
| 1.4.2. Frame Window Object | |
| 1.4.3. Message Map | |
|
 | |
| 2. Drawing in Window | 08Hrs |
| 2.1. GDI | |
| 2.2. MFC Device Context Classes | |
| 2.3. Drawing lines, Curves, Ellipse, Rectangle & Text | |
| 2.4. CPen & CBrush Class | |
| 2.5. GDI Font & CFont class. | |
| 2.6. Adding Scrollbar to Window | |
| 2.7. Setting Scrollbar range, Position Page Size. | |
| 2.8. Processing Scrollbar messages & scrolling Window | |
|
 | |
| 3. The Mouse & the Keyboard | 08Hrs |
| 3.1. Client Area mouse messages | |
| 3.2. Non Client Area mouse Messages | |
| 3.3. The Mouse Wheel | |
| 3.4. Capturing the mouse | |
| 3.5. The Cursor | |
| 3.6. Input Focus | |
| 3.7. Keystroke Messages | |
| 3.8. The Caret | |

4. Menus	05Hrs
4.1. Creating & Displaying menus	
4.2. Responding to Menu Commands	
4.3. Keyboard Accelerators	
4.4. System Menus	
4.5. Context Menus	
5. MFC Collection Classes & File I/O Classes	04Hrs
5.1. MFC Array Classes	
5.2. List Classes	
5.3. Opening, Closing & Creating Files (CFile Class)	
5.4. Reading & Writing Files	
6. Controls	10Hrs
6.1. The Classic Control	
6.2. CButton class	
6.3. CStatic class	
6.4. CEdit class	
6.5. CListBox class	
6.6. CComboBox class	
6.7. CToolBar & CStatusBar Class	

Reference

1. Programming Windows with MFC Second Edition By Jeff Prosise.
2. The Complete reference Visual C++ 6.0 By Chris H. Pappas & William H. Murray (Tata McGraaw-Hill Pub).
3. Programming in Visual C++ By Yeshwant Kanetkar

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S4.8 MySQL

(Total Lectures:44)

80Marks

1. Introducing the MySQL Relational Database Management System 04 Hrs

1.1. Database & Database management system

- 1.1.1. What is Database
- 1.1.2. Database Management systems
- 1.1.3. The SQL Framework
- 1.1.4. What is SQL?
- 1.1.5. Implementation - Specific SQL

1.2. Introduction & Features of MySQL

1.3. Data driven application

- 1.3.1. The application server
- 1.3.2. Connecting to MySQL Database
- 1.3.3. Creating a data driven application

2. Installing MySQL

02 Hrs

2.1. Getting started

- 2.1.1. Making the preliminary decisions
- 2.1.2. Downloading distribution files

2.2. Installing MySQL

- 2.2.1. Using RPM files to install MySQL on Linux
- 2.2.2. Using TAR files to install MySQL on Linux
- 2.2.3. Installing MySQL on Windows
- 2.2.4. Testing your MySQL installation
- 2.2.5. Verifying your Linux installation
- 2.2.6. Verifying your Windows installation

3. Working with MySQL

04 Hrs

3.1. Understanding the MySQL directory structure

- 3.1.1. MySQL file storage
- 3.1.2. The Data Directory

3.2. Using the MySQL programs

- 3.2.1. Specifying program options
- 3.2.2. Server - related programs, Scripts, and Library files
- 3.2.3. Client programs
- 3.2.4. The MySQL utility

3.3. Assigning account passwords

3.4. Setting up a configuration file

- 4. **Managing Databases, Tables, and Indexes** 08 Hrs
 - 4.1. Managing Databases
 - 4.2. Creating Databases
 - 4.3. Modifying Databases
 - 4.4. Deleting Databases
 - 4.5. Managing Tables
 - 4.5.1. Creating Tables
 - 4.5.2. Modifying Tables
 - 4.5.3. Deleting Tables
 - 4.6. Managing Indexes
 - 4.6.1. Index types
 - 4.6.2. Creating indexes
 - 4.6.3. Removing indexes
 - 4.7. Retrieving information about database objects
 - 4.7.1. Using SHOW statements
 - 4.7.2. Using DESCRIBE statements

- 5. **Manipulating data in a MySQL database** 06 Hrs
 - 5.1. Inserting data in a MySQL database
 - 5.1.1. Using an INSERT statement to add data
 - 5.1.2. Using a REPLACE statement to add data
 - 5.2. Updating data in a MySQL database
 - 5.2.1. Using UPDATE statement to update a single table
 - 5.2.2. Using UPDATE statement to update a joined tables
 - 5.3. Deleting data from a MySQL database
 - 5.3.1. Using DELETE statement to delete data
 - 5.3.2. Using TRUNCATE statement to delete data

- 6. **Retrieving data from a MySQL database** 04 Hrs
 - 6.1. The SELECT statement
 - 6.1.1. Using expressions in a SELECT statement
 - 6.1.2. Using Variables in a SELECT statement
 - 6.1.3. Using a SELECT statement to display values
 - 6.2. The SELECT statement options
 - 6.3. The optional clauses of SELECT statement

- 7. **Using operators in your SQL statements** 02 Hrs
 - 7.1. Creating MySQL expressions
 - 7.2. Using operators in expressions

8. Using functions in your SQL statements	04 Hrs
8.1. Comparing and converting data	
8.2. Managing different types of data	
8.3. Summarizing data	
8.4. Performing system operations	
9. Accessing data in multiple tables	03 Hrs
9.1. Creating joins in your SQL statements	
9.2. Creating sub queries in your SQL statements	
10.Procedures & Functions	04 Hrs
10.1. Creating Procedures & using Procedures	
10.2. Creating & Using Triggers	
10.3. Creating & Using Cursors	
11.Backup & Restore Database	03 Hrs
11.1. Backup Database	
11.2. Restore database	

References

1. Beginning MySQL – Wrox Publication

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S4.9 Compiler Designing

(Total Lectures:41)

80Marks

1. Introduction to Compiling:

4Hrs

Compilers, Phases of a compiler, Compiler construction tools, A simple one pass compiler.

2. Lexical Analysis & Syntax Analysis:

9Hrs

Role of a Lexical analyzer, input buffering, specification and recognition of tokens, finite automata implications, designing a lexical analyzer generator.- Role of Parser, Writing grammars for context free environments, Top-down parsing, Recursive descent and predictive parsers (LL), Bottom-Up parsing, Operator precedence parsing, LR, SLR and LALR parsers.

3. Syntax Directed Translation:

7Hrs

Syntax directed definitions, construction of syntax tree, Bottom-up evaluation of S-attributed definitions, L-attributed definitions, Top-down translation and Bottom-up evaluation of inherited attributes, analysis of syntax directed definitions.

4. Run Time Environments :

5Hrs

Source language issues, storage organisation and allocation strategies, parameter passing, symbol table organisations and generations, dynamic storage allocations.

5. Intermediate Code Generation & Code Generation :

10Hrs

Intermediate languages, declarations, assignment statements and boolean expressions, case statements, back patching, procedure calls.

Issues in design of a code generator and target machine, Run time storage management, Basic blocks and flow graphs, Next use information and simple code generator, Issues of register allocation, assignment and basic blocks, code generation from Dags and the dynamic code generation algorithm.

6. Code Optimization :

6Hrs

Sources of optimization, Peephole optimization and basic blocks, loops in flow graphs, Data flow analysis and equations, code improving transformation and aliases, Data flow analysis and algorithms, symbolic debugging of optimized code.

Text Book :

1. Compilers - Principles, Techniques and Tools - A.V. Aho, R. Shethi and J.D. Ullman (Pearson Education.)

References : -

1. Compiler Construction - Dhamdere (Mc-Millan)
2. Compilers - Principles, Techniques and Tools - A.V. Aho, R. Shethi and J.D. Ullman (Addison wesley publishing company.)
3. Compiler Construction - Barret, Bates, Couch (Galgotia)

Syllabus of B.Sc.(SE) (Bachelor of Software Engineering)

B.Sc.(SE) S4.9 Cyber Security

(Total Lectures:47)

80Marks

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|--|---------------|
| 1. Attacks on Computers and Computer Security | 6 hrs |
| 1.1. Introduction | |
| The Need for Security | |
| Principles of Security | |
| Types of Attacks | |
| 2. Cryptography: Concepts and Techniques | 8 hrs |
| Plain text and Cipher Text | |
| Substitution Techniques | |
| Transportation Techniques | |
| Encryption and Decryption | |
| Symmetric and Asymmetric Key Cryptography | |
| Steganography | |
| 3. Symmetric Key Algorithms and AES | 10 hrs |
| Algorithm types and Algorithm modes | |
| An Overview of Symmetric Key Cryptography | |
| Data Encryption Standards (DES) | |
| International Data Encryption Algorithm (IDEA) | |
| RC4 | |
| RC5 | |
| Blowfish | |
| Advanced Encryption Standards | |
| 4. Asymmetric Key Algorithms | 6 hrs |
| Overview of Asymmetric Key Cryptography | |
| The RSA Algorithm | |
| 5. Internet Security Protocol | 8 hrs |
| Secure Socket Layer(SSL) | |
| Transport Layer Security (TLS) | |
| Secure Hyper Text Transfer Protocol (SHTTP) | |
| Time Stamping Protocol (TSP) | |
| Secure Electronic Transaction (SET) | |
| E-mail Security | |

6. Network Security, Firewall and Virtual Private Network 6 hrs

Brief Introduction to TCP/IP

Firewalls

IP Security

Virtual Private Network (VPN)

Text Books:

1. **Cryptography and Network Security.**, Atul Kahate.
2. *Cryptography and Network Security: Principles and practices.*, William Stallings-Third Edition.
3. **The complete Reference Network Security** by Bragg, Rhodes-Ousley.