Chhindwara University,

Chhindwara (M.P.)

Syllabus

of

M.Sc. Computer Science

III Sem.

Chhindwara University, Chhindwara (M.P.)

Syllabus of **M.Sc. Computer Science** SEMESTER SYSTEM

Semester – III (Session: **2020-2021 & Onwards)**

Syllabus opted by the Board of Studies in Computer Science, Chhindwara University in the meeting held on 05Th & 06th February, 2020.

Scheme of Examination

Semester	Course	Title of Papers	Maximum Marks Theory/CCE	Maximum Marks Practical	Minimum Passing Marks Theory/CCE/ Practical	Total
THIRD	Paper-I	Software Engineering	80/20	-	32/08	100
	Paper-II	Programming Skill with JAVA	80/20	-	32/08	100
	Paper-III	Web & E-Commerce Technologies	80/20	-	32/08	100
	Paper-IV	Web Programming with PHP	80/20	-	32/08	100
	Lab-I	JAVA Programming	-	100	40	100
	Lab-II	Web Programming with PHP & MySQL	-	100	40	100

Board of Studies:

I. Chairman – (Dr S K Dubey)

II. Subject Expert –

1. 06/02/2020
2. 06/02/2020
3.
4. 6/2/2020

Chhindwara University, Chhindwara (M.P.)

Syllabus of **M.Sc. Computer Science**

Semester – III

Paper-I: **Software Engineering**

Paper Code: **MSCS – 301**

Max. Marks: **80** Min Pass Marks: **32**

UNIT-I

Software Processes: Processes projects and products, Component software processes, characteristics of a software process, software Development Process, project management process, software configuration management process, software configuration management process, process management process.

Software requirement Analysis and Specification: Software requirement, need for SRS, requirement process, problem analysis, analysis issues. Informal approach, structured analysis, object oriented modeling, other modeling approaches, prototyping, requirement specification, characteristics of an SRS, component of an SRS, specification languages, structure of requirement document validation requirement reviews, other method metrics, size measures, quality metrics.

UNIT-II

Planning Software Project: Cost estimation, uncertainties in cost estimation, building cost estimation models, on size estimation, COCOMO model, project scheduling, average duration estimation, project scheduling and milestones, staffing and personnel planning, rayleigh curve, personnel plan, team structure, software configuration management plans, quality assurance plans, verification and validation, project monitoring plans, risk management.

UNIT-III

Function Oriented Design: Design principles, coupling, cohesion, design notation and specification, structured design methodology, verification, network metrics, stability metrics, information flow metrics Software Testing.

UNIT-IV

Testing Methods: Software testing fundamentals, test case design, white box testing, control structure testing, black-box testing, testing for specialized environments. Software Testing Strategies: A Strategic Approach to software testing, strategic issues, unit testing, validation testing, system testing, the art of debugging.

UNIT-V

Re-Engineering: Software re-engineering, software maintenance, a software reengineering process model, reverse engineering, reverse engineering user interfaces, restructuring, code restructuring, data restructuring, forward engineering the economics of reengineering.

Client/Server software Engineering: The structure of client/server systems, software engineering for c/s systems, analysis modeling issues, design for C/S systems, testing issues. Computer-Aided software Engineering: What is case, building blocks for case, a taxonomy of case tools, integrated case environments, the integration architecture, the case repository.

Text Books:

1. Presman Roger, *Software, Engineering: A Practitioner's Approach,* Tata McGraw Hill, New Delhi.
2. Jalote Pankaj, *An Integrated Approach to Software Engineering,* Narosa, New Delhi.

Reference Books:

1. R.E. Fairly. *Software Engineering Concepts*, McGraw Hill, Inc 1985.
2. Poyce, *Software Project Management*, Addison-Wesly.
3. Sommerville, *Software Engineering*, Addison-Wesly.

Sections/Part	Questions Type	Marks Distribution	Remarks
Section- A	Objective Type Question (At least one question to be set from each unit)	1x10=10 Marks	
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Section- C	Long Answer Type Question (Two question to be set from each unit and one from unit to be attempted)	10x50=50 Marks	
	Total	80 Marks	

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Syllabus of **M.Sc. Computer Science**

Semester – III

Paper-II: **Programming Skill with JAVA**

Paper Code: **MSCS – 302**

Max. Marks: **80** Min Pass Marks: **32**

Unit-I

Introduction to Java: Java Architecture and Features, Understanding the semantic and syntax differences between C++ and Java, Compiling and Executing a Java Program, Variables, Constants, Keywords Data Types, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, Java Methods (Defining, Scope, Passing and Returning Arguments, Type Conversion and Type and Checking, Built-in Java Class Methods).

Unit-II

Arrays, Strings and I/O: Creating & Using Arrays (One Dimension and Multi-dimensional), Referencing Arrays Dynamically, Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability & Equality, Passing Strings To & From Methods, String Buffer Classes. Simple I/O using System.out and the Scanner class, Byte and Character streams, Reading/Writing from console and files.

Object-Oriented Programming Overview: Principles of Object-Oriented Programming, Defining & Using Classes, Controlling Access to Class Members, Class Constructors, Method Overloading, Class Variables & Methods, Objects as parameters, final classes, Object class, Garbage Collection.

Unit-III

Inheritance, Interfaces, Packages, Enumerations, Autoboxing and Metadata

Inheritance: (Single Level and Multilevel, Method Overriding, Dynamic Method Dispatch, Abstract Classes), Interfaces and Packages, Extending interfaces and packages, Package and Class Visibility, Using Standard Java Packages (util, lang, io, net), Wrapper Classes, Autoboxing / Unboxing, Enumerations and Metadata.

Unit-IV

Exception Handling, Threading, Networking and Database Connectivity: Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions;

Multi-threading: The Thread class and Runnable interface, creating single and multiple threads, Thread prioritization, synchronization and communication, suspending/resuming threads. Using java.net package, Overview of TCP/IP and Datagram programming. Accessing and manipulating databases using JDBC.

Unit-V

Applets and Event Handling: Introduction to Applets, Writing Java Applets, Working with Graphics, Incorporating Images & Sounds. Event Handling Mechanisms, Listener Interfaces, Adapter and Inner Classes. The design and Implementation of GUIs using the AWT controls, Swing components of Java Foundation Classes such as labels, buttons, text fields, layout managers, menus, events and listeners; Graphic objects for drawing figures such as lines, rectangles, ovals, using different fonts. Overview of servlets.

6/2/2020 06/02/2020 06/02/2020

Reference Books

1. Ken Arnold, James Gosling, David Homes, *"The Java Programming Language"*, 4th Edition, 2005.
2. James Gosling, Bill Joy, Guy L Steele Jr, Gilad Bracha, Alex Buckley *"The Java Language Specification,* Java SE 8 Edition (Java Series)", Published by Addison Wesley, 2014.
3. Joshua Bloch, *"Effective Java"* 2nd Edition,Publisher: Addison-Wesley, 2008.
4. Cay S. Horstmann, Gary Cornell, "*Core Java 2* Volume 1 ,9th Edition, Printice Hall.2012
5. Cay S. Horstmann, Gary Cornell, *"Core Java 2* Volume 2 - Advanced Features)", 9th Edition, Printice Hall.2013
6. Bruce Eckel, *"Thinking in Java"*, 3rd Edition, PHI, 2002.
7. E. Balaguruswamy, *"Programming with Java"*, 4th Edition, McGraw Hill.2009.
8. Paul Deitel, Harvey Deitel, *"Java: How to Program"*, 10th Edition, Prentice Hall, 2011.
9. *"Head First Java"*, Orielly Media Inc. 2nd Edition, 2005.
10. David J. Eck, *"Introduction to Programming Using Java"*, Published by CreateSpace Independent Publishing Platform, 2009.
11. John R. Hubbard, *"Programming with JAVA"*, Schaum's Series, 2nd Edition, 2004.

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Syllabus of **M.Sc. Computer Science**

Semester – III

Paper-III: **Web & E-Commerce Technologies**

Paper Code: **MSCS – 303**

Max. Marks: **80** Min Pass Marks: **32**

UNIT- I

An introduction to Electronic commerce: What is E-Commerce (Introduction And Definition), Main activities E-Commerce, Goals of E-Commerce, Technical Components of E-Commerce, Functions of E-Commerce, Advantages and disadvantages of E-Commerce, Scope of E-Commerce, Electronic Commerce Applications, Electronic Commerce and Electronic Business (C2C) (C2G, G2G, B2G, B2P, B2A, P2P, B2A, C2A, B2B, B2C)

UNIT-II

The Internet and WWW: Evolution of Internet, Domain Names and Internet Organization (.edu, .com, .mil, .gov, .net etc.) , Types of Network, Internet Service Provider, World Wide Web, Internet & Extranet, Role of Internet in B2B Application, building own website, Cost, Time, Reach, Registering a Domain Name, Web promotion, Target email, Baner, Exchange, Shopping Bots

UNIT-III

Internet Security: Secure Transaction, Computer Monitoring, Privacy on Internet, Corporate Email privacy, Computer Crime(Laws , Types of Crimes), Threats, Attack on Computer System, Software Packages for privacy, Hacking, Computer Virus (How it spreads, Virus problem, virus protection, Encryption and Decryption, Secret key Cryptography, DES, Public Key Encryption, RSA, Authorisation and Authentication, Firewall, Digital Signature (How it Works).

UNIT-IV

Electronic Data Exchange: Introduction, Concepts of EDI and Limitation, Applications of EDI, Dis-advantages of EDI, EDI model.

Electronic Payment System: Introduction, Types of Electronic Payment System, Payment Types, Value Exchange System, Credit Card System, Electronic Fund Transfer, Paperless bill, Modern Payment Cash, Electronic Cash

UNIT-V

Planning for Electronic Commerce: Planning Electronic Commerce initiates, Linking objectives to business strategies, Measuring cost objectives, Comparing benefits to Costs, Strategies for developing electronic commerce web sites.

Internet Marketing: The PROS and CONS of online shopping, The cons of online shopping, Justify an Internet business, Internet marketing techniques, The E-cycle of Internet marketing, Personalization e-commerce.

Recommended Books:

1. G.S.V. Murthy, *E-Commerce Concepts, Models, Strategies,* Himalaya Publishing House, 2011.
2. Kamlesh K Bajaj and Debjani Nag , *E-Commerce*, 2005.

3. Gray P. Schneider, *Electronic Commerce,* International Student Edition, 2011,
4. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, *E-Commerce: Fundamentals and Applications,* Wiely Student Edition, 2011

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Semester – III

Paper-IV: **Web Programming with PHP**

Max. Marks: **80** Paper Code: **MSCS – 304** Min Pass Marks: **32**

UNIT I

BASICS OF PHP: Introduction to PHP, what does PHP Do?, Object Oriented Programming with PHP, language basics, installation of XAMPP/LAMP, syntax, comments, variables, constants and data types, expressions and operators, flow control statements, including html code in PHP, embedding PHP in web pages.

UNIT II

FUNCTIONS & STRINGS: Defining a function, Calling a function, variable scope, function parameters, return values, predefined functions.

Strings: Creating & accessing string, searching and replacing strings, encoding and escaping, comparing strings, formatting strings, regular expression.

UNIT III

Data & File Handling: PHP Forms: $_GET, $_POST, $_REQUEST, $_FILES, $_SERVER, $GLOBALS, $_ENV, input/output controls, validation, Cookies and Sessions.

File Handling: File and directory, open, close, read, write, append, delete, uploading and downloading files. File exists, File Size, Rename. Reading and display all/selected files present in a directory.

UNIT IV

MYSQL AN OVERVIEW: Introduction, phpMyAdmin, Entering queries, Creating and using a database, Creating and selecting a database, creating a table, loading data into a table, Retrieving information from a table, selecting all data, selecting particular rows, selecting particular columns, sorting, date, calculations, working with NULL values, pattern matching, counting rows, using more than one tables.

UNIT V

MYSQL DATABASES IN PHP: Introduction, connecting to a MySQL database, querying the database, Retrieving and displaying the results, modifying data and deleting data through front end. Designing applications using PHP & MySQL.

Text Books & References:

1. PHP & MySQL, VikramVaswani, McGraw-Hill
2. The Complete Reference - PHP, Steven Holzner, McGraw-Hill
3. The Complete Reference – MySQL, VikramVaswani, McGraw-Hill
4. Beginning PHP 5.3, Matt Doyle, Wrox Publication
5. PHP for the Web covers PHP5 & 7, Larry Ullman
6. Programming PHP, RasmusLerdorf, Kevin Tatroe, Bob Kaehns, RicMcGredy, O'REILLY.
7. "PHP 5 Recipes, A problem solution approach", Lee Babin, Nathan A. Good, Frank M. Kromann, and Jon Stephens, Apress

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Syllabus of **M.Sc. Computer Science**

Semester – III

Lab-I: **JAVA Programming**

Code: **MSCS – 305**

Max. Marks: **100** Min Pass Marks: **40**

1. To find the sum of any number of integers entered as command line arguments
2. To find the factorial of a given number
3. To learn use of single dimensional array by defining the array dynamically.
4. To learn use of length in case of a two dimensional array.
5. To convert a decimal to binary number.
6. To check if a number is prime or not, by taking the number as input from the keyboard.
7. To find the sum of any number of integers interactively, i.e., entering every number from the keyboard, whereas the total number of integers is given as a command line argument.
8. Write a program that show working of different functions of String and StringBufferclasss like setCharAt(, setLength(), append(), insert(), concat()and equals().
9. Write a program to create a —distancel class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer.
10. Modify the —distancel class by creating constructor for assigning values (feet and inches) to the distance object. Create another object and assign second object as reference variable to another object reference variable. Further create a third object which is a clone of the first object.
11. Write a program to show that during function overloading, if no matching argument is found, then java will apply automatic type conversions (from lower to higher data type)
12. Write a program to show the difference between public and private access specifiers. The program should also show that primitive data types are passed by value and objects are passed by reference and to learn use of final keyword
13. Write a program to show the use of static functions and to pass variable length arguments in a function.
14. Write a program to demonstrate the concept of boxing and unboxing.
15. Create a multi-file program where in one file a string message is taken as input from the user and the function to display the message on the screen is given in another file (make use of Scanner package in this program).
16. Write a program to create a multilevel package and also creates a reusable class to generate Fibonacci series, where the function to generate fibonacii series is given in a different file belonging to the same package.
17. Write a program that creates illustrates different levels of protection in classes/subclasses belonging to same package or different packages
18. Write a program —DivideByZerol that takes two numbers a and b as input, computes a/b, and invokes Arithmetic Exception to generate a message when the denominator is zero.
19. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.
20. Write a program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
21. Write a program to demonstrate priorities among multiple threads.
22. Write a program to demonstrate multithread communication by implementing synchronization among threads (Hint: you can implement a simple producer and consumer problem).

23. Write a program to create URL object, create a URL Connection using the openConnection() method and then use it examine the different components of the URL and content.
24. Write a program to implement a simple datagram client and server in which a message that is typed into the server window is sent to the client side where it is displayed.
25. Write a program that creates a Banner and then creates a thread to scrolls the message in the banner from left to right across the applet's window.
26. Write a program to get the URL/location of code (i.e. java code) and document (i.e. html file).
27. Write a program to demonstrate different mouse handling events like mouseClicked(), mouseEntered(), mouseExited(), mousePressed, mouseReleased() and mouseDragged().
28. Write a program to demonstrate different keyboard handling events.
29. Write a program to generate a window without an applet window using main() function.
30. Write a program to demonstrate the use of push buttons.

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Syllabus of **M.Sc. Computer Science**

Semester – III

Lab-II: **Web Programming with PHP & MySQL**

Code: **MSCS – 306**

Max. Marks: **100**

Min Pass Marks: **40**

Suggested list of Practicals

1. Create a simple HTML form and accept the user name and display the name through PHP echo statement.
2. Write a PHP script to demonstrate arithmetic operators, comparison operator, and logical operator.
3. Write PHP Script to input marks, generate result and display grade.
4. Write PHP Script for addition of two 2x2 matrices.
5. Write PHP script to obtain factorial of a number using function
6. Write PHP script to demonstrate string, date and math function.
7. Write PHP script to demonstrate
8. Create student registration form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page.
9. Write two different PHP script to demonstrate passing variables through a URL.
10. Write two different PHP script to demonstrate passing variables with sessions.
11. Write PHP script to demonstrate passing variables with cookies.
12. Write a program to keep track of how many times a visitor has loaded the page.
13. Write PHP script to demonstrate exceptional handling.
14. Write a PHP script to connect MySQL server from your website.
15. Write a program to read customer information like cust_no, cust_name, Item_purchase, and mob_no, from customer table and display all these information in table format on output screen.
16. Write a program to edit name of customer to "Bob" with cust_no =1, and to delete record with cust_no=3.
17. Write a program to read employee information like emp_no, emp_name, designation and salary from EMP table and display all this information using table format.
18. Create a dynamic web site using PHP and MySQL.

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