

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's
New Arts, Commerce and Science College, Ahmednagar
(Autonomous)
(Affiliated to Savitribai Phule Pune University, Pune)



Choice Based Credit System (CBCS)

Master of Science (Computer Applications)

Master of Science (Computer Applications)-I

Implemented from

Academic year 2021 -22

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's
New Arts, Commerce and Science College, Ahmednagar
(Autonomous)

Board of Studies in Master of Science (Computer Applications)

Sr. No.	Name	Designation
1.	Prof. Arun.D.Gangarde	Chairman
2.	Prof. Priyamvada Patil	Member
3.	Dr.Shraddha Ingale	Member
4.	Dr.Mudassar Sahikh	Member
5.	Dr.Santosh Khamitkar	Academic Council Nominee
6.	Dr. Shankar Mali	Academic Council Nominee
7.	Dr.Nitin Patil	Vice Chancellor Nominee
8.	Mr.Summit Suryawanshi	Alumni
9.	Dr.Deepak Shikarpur	Industry Expert
10.	Prof.Deepali Jagdale	Co-Opted Member
11.	Dr. Madhukar Shelar	Co-Opted Member

1. Introduction of the programme

The M.Sc. (Computer Applications) program is a combination of computer programming, applications and information technology courses. The courses introduce techniques of programming, databases, web designing, system analysis, design tools and different computing environments.

In the context with information Technology industry, the objectives of M.Sc. (Computer Applications) course are: -

- To produce knowledgeable and skilled human resources that is employable in IT and ITES.
- To impart knowledge required for planning, designing and building Complex Application Software Systems as well as to provide support for automated systems or applications.
- To produce entrepreneurs M.Sc. (Computer Applications) Program is of Two Years duration with four semesters. It is a Full Time post graduate Degree Program. The program will be based on Choice-based credit system comprising of total 88 credit points.

2. Programme outcomes

The main objective of the Program is to produce trained software professionals with hands-on experience on state-of-the art technologies who will be able to handle software challenges in industry as well as academia.

It is believed that the proposed syllabus as part of the credit based system will bring a qualitative change in the way M.Sc. (Computer Applications) is taught, which will offer a more enriched learning experience. It aims to provide technology-oriented students with the knowledge and ability to develop creative solutions, and better understand the effects of future developments of computer systems and technology on people and society.

The syllabus is about developing skills to learn new technology, grasping the concepts and issues behind its use and the use of computers.

3. Eligibility:

A Bachelor Degree in Science/Technology/Engineering with minimum 50% marks or equivalent for student belonging to Unreserved Category and minimum 45% or equivalent for students belonging to the Reserved Category.

Admission: Admissions will be offered as per the selection procedure / policies adopted by the respective colleges, in accordance with conditions laid down by the Savitribai Phule Pune University.

Reservation and relaxation will be as per the government rules.

4. Programme Structure and Course Titles:

M.Sc. Computer Applications

Sr.No	Class	Sem	Course Code	Course Title	Credits
1.	M.Sc. I	I	MSC-CA 111T	Internet and Java Programming	04
2.	M.Sc. I	I	MSC-CA 112T	Design and Analysis of Algorithms	04
3.	M.Sc. I	I	MSC-CA 113T	Advance Databases	04
4.	M.Sc. I	I	MSC-CA 114P	Lab on Internet and Java Programming	04
5.	M.Sc. I	I	MSC-CA 115T(A)	Web Technology	02
6.	M.Sc. I	I	MSC-CA 115P(A)	Web Technology(Lab)	02
7.	M.Sc. I	I	MSC-CA 115T(B)	Software Testing	02
8.	M.Sc. I	I	MSC-CA 115P(B)	Software Testing Lab	02
9.	M.Sc. I	I	MSC-CA 116T/P	Python Programming	02
10.	M.Sc. I	II	MSC-CA 211T	ASP.NET	04
11.	M.Sc. I	II	MSC-CA 212T	Operating System Concepts	04
12.	M.Sc. I	II	MSC-CA 213T	Advance Networking Concepts	04
13.	M.Sc. I	II	MSC-CA 214T	ASP.NET Lab	04
14.	M.Sc. I	II	MSC-CA 215T(A)	Django	02
15.	M.Sc. I	II	MSC-CA 215P(A)	Django Lab	02
16.	M.Sc. I	II	MSC-CA 215T(B)	Cloud Computing (Design of web services)	02
17.	M.Sc. I	II	MSC-CA 215P(B)	Cloud Computing Lab	02
18.	M.Sc. I	II	MSC-CA 216T/P	Data ware housing and data mining	02
19.	M.Sc. II	III	MSC-CA 311T	Mobile Application Development Using Android	04
20.	M.Sc. II	III	MSC-CA 312T	Artificial Intelligence	04
21.	M.Sc. II	III	MSC-CA 313T	Software Project Management	04
22.	M.Sc. II	III	MSC-CA 314P	Mobile Application Development Using Android Lab	04
23.	M.Sc. II	III	MSC-CA 315T(A)	Angular JS	02
24.	M.Sc. II	III	MSC-CA 315P(A)	Angular JS Lab	02
25.	M.Sc. II	III	MSC-CA 315T(B)	Social Media Analysis	02
26.	M.Sc. II	III	MSC-CA 315P(B)	Social Media Analysis Lab	02
27.	M.Sc. II	III	MSC-CA 316T/P	Internet of Things	02
28.	M.Sc. II	IV	Industrial Internship	Project	22
	Total	04	28		88

Syllabus

SEMESTER-I

Semester -I	Paper -I
Course Code: MSC-CA 111T	Title of the Course: Internet and Java Programming
Credits: 04	Total Lectures: 60 Hrs

Course Outcomes (Cos):

1. Use the syntax and semantics of java programming language and basic concepts of OOP.
2. Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
3. Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.
4. Design event driven GUI and web related applications which mimic the real word scenarios

Detailed Syllabus

UNIT I: Introduction to Java

(Allotted lectures 3)

- History and Features of Java JDK, JRE, JIT,
- Bytecode and JVM
- Simple java program
- Data Types Variable: final, static, abstract Array, Function

UNIT II: Objects and Classes

(Allotted lectures 5)

- Definition of Class Access Specifiers
- Constructors Use of “this” keyword String
- String Buffer and Wrapper class
- Inner classes, Nested classes, local classes, Anonymous classes (Anonymous object)
Introduction to Packages Garbage Collection (finalize () Method)

UNIT III: Inheritance and Collection

(Allotted lectures 8)

- Inheritance Basics
- Types of Inheritance Use of 'super' and 'Final' Keyword
- Usage of abstract class and abstract methods
- Interface Introduction to Collection

UNIT IV: Exception Handling and I/O

(Allotted lectures 8)

- Introduction to Exception Handling Exception types, Exception class, User defined exception
- Introduction to Java.io package: Byte streams, Character streams
- File IO basics Object serialization – Reader and Writer

UNIT V: Swing, Applet programming**(Allotted lectures 10)**

- MVC (Model View Controller) Architecture
- Swing Applet fundamentals
- Applet lifecycle
- Creating and running applets
- Applets: Event handling using applets.

UNIT VI: Database Programming**(Allotted lectures 6)**

- Introduction to JDBC: Architecture JDBC Drivers, Connectivity.
- JDBC statement, JDBC ResultSet and types JDBC Metadata

UNIT VII: Servlets**(Allotted lectures 10)**

- Introduction to Servlet and Hierarchy of Servlet
- Life cycle of servlet Handling HTTPRequest and HTTPResponse
- HttpServlet: → Reading form data from servlet →
- Servlet - Database communication
- Session tracking –User Authorization, URL Rewriting, Hidden Form fields
- Cookies and HttpSession

UNIT VIII: JSP**(Allotted lectures 10)**

- Simple first JSP program
- Life cycle of JSP
- Implicit Objects Scripting elements –Declarations, Expressions, Scriptlets,
- Comments JSP Directives –Page Directive, include directive
- Mixing Scriptlets and HTML
- Example of forwarding contents from database to servlet servlet to JSP and displaying it using JSP scriplet tag

Suggested Books:

1. Complete reference Java by Herbert Schildt(5th edition)
2. Java 2 programming black books, Steven Horlzner
3. Java EE Project using EJB 3, JPA and struts 2 for beginners, Shah, SPD
4. Core Java Volume-II Advanced Features, Eighth Edition, Cay S.Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press
5. Commercial web development using java 2.0, Ivan Byaross, BPB

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -I	Paper-II
Course Code: MSC-CA 112T	Title of the Course: Design and Analysis of Algorithms
Credits: 04	Total Lectures: 60 Hrs.

Course Outcomes (Cos):

1. Demonstrate a familiarity with major algorithms and data structures.
2. Apply important algorithmic design paradigms and methods of analysis.
3. Synthesize efficient algorithms in common engineering design situations.
4. Understand different algorithmic design strategies
5. Analyze the efficiency of algorithms using time and space complexity theory

Detailed Syllabus

UNIT I: Fundamentals of Algorithms and mathematics

(Allotted lectures 4)

- Problem, algorithm definitions
- Mathematics for algorithmic
- Sets
- Functions and relations
- Combinations
- Vectors and matrices
- Linear inequalities and linear equations

UNIT II: Analysis of Algorithm

(Allotted lectures 8)

- Algorithm Performance Analysis - space complexity, time complexity, and worst case – best case –average case complexity
- Asymptotic notations
- Sorting algorithms (Bubble sort, insertion sort, heap sort)
- Sorting in linear time (Counting, radix and Bucket Sort)
- Searching algorithms
- Recursive algorithms (Tower of Hanoi, Permutations)

UNIT III: Divide and conquer design strategy

(Allotted lectures 9)

- Control abstraction
- Recurrence and different methods to solve recurrence
- Binary search
- Max-Min problem
- Merge sort
- Quick sort
- Strassen's matrix multiplication

UNIT IV: Greedy Method**(Allotted lectures 8)**

- General strategy
- Knapsack problem
- Job sequencing with deadlines
- Minimum-cost spanning trees, Kruskal and Prim's algorithm
- Optimal storage on tapes
- Optimal merge patterns
- Huffman coding

UNIT V: Dynamic programming**(Allotted lectures 8)**

- General Strategy
- The Principle of Optimality
- Matrix chain multiplication
- Longest common subsequence
- String editing
- 0/1 knapsack problem,
- Traveling salesperson problem

UNIT VI: Graph Algorithms**(Allotted lectures 8)**

- Introduction – Basic definitions of graph
- Graph Traversals- BFS, DFs, classification of edges
- Topological sort
- Strongly connected components
- Single source shortest paths- Dijkstra's algorithm
- Bellman- Ford algorithm
- All pairs shortest paths, Floyd-Marshall algorithm
- Flow networks, Ford-Fulkerson method

UNIT VII: Backtracking**(Allotted lectures 6)**

- General method
- 8 Queen's problem
- Sum of subsets problem
- Graph coloring problem
- Hamiltonian cycle

UNIT VIII: Branch and Bound**(Allotted lectures 6)**

- General method
- FIFO, LIFO, LCBB,
- TSP problem
- 0/1 knapsack problem

UNIT IX: Problem classification**(Allotted lectures 3)**

- Nondeterministic algorithm

- The class of P, NP, NP-hard and NP- Complete problems
- Significance of Cook's theorem

Suggested Books:

1. Computer Algorithms, Ellis Horowitz, Sartaj Sahni & Sanguthevar Rajasekaran, Galgotia
2. Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, PHI.
3. The Design and Analysis of Computer Algorithms, A. Aho, J. Hopcroft, & J. Ullman, Addison Wesley, 1974
4. The Art of Computer Programming (3 vols., various editions, 1973-81) Donald Knuth, Addison Wesley
5. Fundamental of Algorithms, Gills Brassard, Paul Bratley, PHI.
6. Introduction to Design and Analysis of Algorithms, Anany Levitin, Pearson.
7. Foundations of Algorithms, Shailesh R Sathe, Penram
8. Design and Analysis of Algorithms, S. Sridhar, Oxford University press, 2014.
9. <http://www.personal.kent.edu/~rmuhamma/Algorithms/algorithm.html>
10. <https://nptel.ac.in/courses/106106131/> 11. <http://openclassroom.stanford.ed>

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -I	Paper-III
Course Code: MSC-CA 113T	Title of the Course: Advance Databases
Credits: 04	Total Lectures: 60 Hrs.

Course Outcomes(Cos)

1. To get knowledge of Query optimization, Parallel and distributed database systems, New database architectures and query operators, query processing and optimization, concurrency control techniques, database recovery techniques, database security and authorization
2. To develop new methods in databases based on knowledge of existing techniques.
3. To apply acquired knowledge for developing holistic solutions based on database systems/database techniques.

Detailed Syllabus

UNIT I: Functional Dependency

(Allotted lectures 6)

- Introduction, Definition
- Trivial / nontrivial dependencies
- Closure of a dependency set
- Closure of an attribute set
- Irreducible set of dependencies
- Normalization (1,2, 3, BCNF)
- Multi-valued dependencies, 4th NF, join dependencies, 5thNF

UNIT II: Procedural programming PL/PgSQL

(Allotted lectures 14)

- Adding PL/PGSQL to database
- language structure
- using variables
- controlling program flow
- stored functions
- views
- Exception handling
- concept and creation of cursor and triggers
- using transaction control statements, Locks.

UNIT III: Query processing and optimization

(Allotted lectures 6)

- Overview of Query processing,
- Measures of query cost,
- Selection, join, projection, evaluation of expression.
- Transformation of relational expressions,

- Estimating statistics of expression results,
- Choice of evaluation plans

UNIT IV: Introduction to Transaction processing concepts & theory (Allotted lectures 5)

- Introduction, transaction and system concepts
- Desirable properties of transactions
- Characterizing schedules based on recoverability
- Characterizing schedules based on serializability
- Transaction support in SQL

UNIT V: Concurrency control techniques (Allotted lectures 8)

- Concept of Locking and lock manager component
- Binary locking mechanism
- 2- Phase locking techniques for concurrency control
- C.C based on timestamp ordering
- Multi-version concurrency control
- Validation (optimistic) technique
- Granularity of data items
- Multiple granularity locking for C.C.
- Using locks for concurrency control in indexes.

UNIT VI: Database recovery techniques (Allotted lectures 4)

- Failure classification
- Recovery concepts
- Recovery techniques based on deferred updates & immediate updates
- Shadow paging
- Aries recovery algorithm
- Database backup & recovery

UNIT VII: Database security (Allotted lectures 4)

- Introduction
- Discretionary access control based on Grant & Revoke
- Mandatory access control & role based access control for multilevel security
- introduction to statistical database security
- introduction to flow control
- challenges in database security

UNIT VIII: Parallel and Distributed Databases (Allotted lectures 8)

- Architecture for parallel databases
- Parallel query optimization
- Parallelizing individual operations
- Introduction to distributed databases
- Distributed database architectures
- Storing data in a Distributed database system

- Distributed catalog Management
- Distributed query processing
- Updating distributed data
- Introduction to distributed transactions
- Distributed concurrency control
- Distributed recovery

UNIT IX: Internet Databases

(Allotted lectures 5)

- The worldwide web, Databases and web
- Architecture (application servers and server side scripting)
- Introduction to XML, XML DTDs, Domain specific DTDs, XML-QL: Querying XML data
- Semi-structured data model, Implementation issues for Semi-Structured data
- Indexing for text search (inverted files, Signature files)
- Rank keyword searches on web. (An algorithm for ranking web pages.)

Suggested Books:

1. Database System Concepts, Henry F. Korth, Abraham Silberschatz, S. Sudarshan, Tata McGraw- Hill, 6th Edition.
2. Database Systems, Shamkant B. Navathe, RamezElmasri, Pearson, 5th Edition.
3. Database management systems, Raghu Ramakrishnan & Johannes Gehrke, 2 nd Edition.
4. Database Management system, Bipin Desai,
5. An introduction to database systems, C. J. Date,
6. Principles of Distributed Database Systems, M. Tamer Ozsu and Patrick Valduriez, Pearson, 2nd Edition.
7. Practical Postgresql, JoshuaD. Drake, John C Worsley, O'reilly Publication

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -I	Paper-IV
Course Code: MSC-CA 114P	Title of the Course: Lab on Java Programming
Credits: 04	Total Lectures: 120 Hrs.

Assignments

1. To find the sum of 10 number of integers entered by user.
2. To find the factorial of a given number (Use command line argument)
3. To learn use of single dimensional array.
4. To learn use of a two dimensional array
5. To convert a decimal to binary number and vice-versa.
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 StringBufferclass like setCharAt(), setLength(), append(), insert(), concat()and equals().
9. Write a program to create a “Time” class with methods where Time is computed in terms of hrs and minutes, how to create objects of a class and to see the use of this pointer
10. Modify the “Time” class by creating constructor for assigning values (hours and minutes) to the time 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 that creates illustrates different levels of protection in classes/subclasses belonging to same package or different packages
15. Write a program “DivideByZero” 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.

16. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.
17. 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).
18. 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.
19. 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.
20. Write a program to demonstrate different mouse handling events like mouseClicked(), mouseEntered(), mouseExited(), mousePressed, mouseReleased() and mouseDragged().
21. Write a program to demonstrate different keyboard handling events.
22. Write a program to generate a window without an applet window using main() function.
23. Write a program to demonstrate the use of Traffic Signals.
24. Java Program to Display Characters from A to Z using loop
25. Java Program to Count Number of Digits in an Integer
26. Java Program to Reverse a Number
27. Java Program to Calculate the Power of a Number
28. Java Program to Check Whether a Number is Palindrome or Not
29. Java Program to Check Whether a Number is Prime or Not
30. Java Program to Display Prime Numbers Between Two Intervals
31. Java Program to Check Armstrong Number
32. Java Program to Display Armstrong Number Between Two Intervals
33. Java Program to Display Prime Numbers Between Intervals Using Function
34. Java Program to Display Armstrong Numbers Between Intervals Using Function
35. Java Program to Display Factors of a Number
36. Java Program to Make a Simple Calculator Using switch...case
37. Creating a web page using JSP Tags
38. Understanding the behavior of cookies and session management using JSP
39. Create MVC application: using Servlet, JSP, Understanding

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -I	Paper-V
Course Code: MSC-CA 115T(A)	Title of the Course: Web Technology
Credits: 02	Total Lectures: 30 Hrs.

Course Outcomes(Cos)

- This Subject is useful for making own Web page and how to host own web site on internet.
- Along with that Students will also learn about the protocols involve in internet technology.

UNIT I: Introduction to WWW

(Allotted lectures 5)

- Protocols and programs
- secure connections
- application and development tools
- the web browser
- what is server
- choices
- setting up UNIX and Linux web servers
- Logging users
- dynamic IP Web Design: Web site design principles, planning the site and navigation

UNIT II: Introduction to HTML

(Allotted lectures 5)

- The development process
- Html tags and simple HTML forms
- web site structure,
- Introduction to XHTML: XML, Move to XHTML, Meta tags, Character entities, frames and frame sets, inside browser.

UNIT III: Style sheets

(Allotted lectures 5)

- Need for CSS
- introduction to CSS basic syntax and structure
- using CSS: background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists
- positioning using CSS, CSS2

UNIT IV: Javascript

(Allotted lectures 5)

- Client side scripting
- What is Javascript
- How to develop Javascript

- simple Javascript: variables, functions, conditions, loops and repetition

UNIT V: Advance script

(Allotted lectures 5)

- Javascript and objects
- Javascript own objects
- the DOM and web browser environments
- forms and validations
- DHTML: Combining HTML
- CSS and Javascript: events and buttons, controlling your browser
- Ajax: Introduction, advantages & disadvantages, Purpose of it, ajax based web application, alternatives of ajax

UNIT VI: XML

(Allotted lectures 5)

- Introduction to XML
- uses of XML
- simple XML and XML key components.
- DTD and Schemas, Well formed
- using XML with application.XML, XSL and XSLT.
- Introduction to XSL, XML transformed simple example, XSL elements, transforming with XSLT

UNIT VII: PHP

(Allotted lectures 5)

- Starting to script on server side
- Arrays
- function and forms
- advance PHP Databases : Basic command with PHP examples, Connection to server, creating database, selecting a database, listing database, listing table names creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP myadmin and database bugs.

Reference Books:

1. Steven Holzner, "HTML Black Book", Dremtech press.
2. Web Technologies, Black Book, Dreamtech Press
3. Web Applications: Concepts and Real World Design, Knuckles, Wiley-India
4. Internet and World Wide Web How to program, P.J. Deitel & H.M. Deitel Pearson.

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -I	Paper- V
Course Code: MSC-CA 115P(A)	Title of the Course: Lab on Web Technology
Credits: 02	Total Lectures: 60 Hrs.

Web Tech Practical List:

Practical Set -1 HTML

1. Design web pages for your college containing a description of the courses, departments, faculties, library etc, use href, list tags.
2. Create your class timetable using table tag.
3. Create user Student feedback form (use textbox, text area, checkbox, radio button, select box etc.)
4. Create a web page using frame. Divide the page into two parts with Navigation links on left hand side of page (width=20%) and content page on right hand side of page (width = 80%). On clicking the navigation Links corresponding content must be shown on the right hand side.
5. Write html code to develop a webpage having two frames that divide the webpage into two equal rows and then divide the row into equal columns fill each frame with a different background color.
6. Create your resume using HTML tags also experiment with colors, text, link, size and other tags you studied.

Practical Set -2 CSS

7. Design a web page of your hometown with an attractive background color, text color, an Image, font etc. (use internal CSS).
8. Use Inline CSS to format your resume that you created.
9. Use External CSS to format your class timetable as you created.
10. Use External, Internal, and Inline CSS to format college web page that you created.

Practical Set -3 JavaScript

11. Develop a JavaScript to display today's date.
12. Develop simple calculator for addition, subtraction and multiplication and division operation using JavaScript
13. Create HTML Page with JavaScript which takes Integer number as input and tells whether the number is ODD or EVEN.

14. Create HTML Page that contains form with fields Name, Email, Mobile No, Gender, Favorite Color and a button now write a JavaScript code to combine and display the information in textbox when the button is clicked.

15. Implement Validation in above Feedback Form.

16. Use regular expression for validation in Feedback Form.

17. Using Ajax retrieve data from a TXT file and display it.

Practical Set -4 XML

18. Create XML file to store student information like Enrollment Number, Name, Mobile Number, and Email Id.

19. Create DTD for above XML File.

20. Create XML Schema for above (Practical No. 18)

21. Create XSL file to convert above (refer Practical No. 17) XML file into XHTML file.

Practical Set -5 PHP

22. Write a php program to display today's date in dd-mm-yyyy format.

23. Write a php program to check if number is prime or not.

24. Write a php program to print first 10 Fibonacci Numbers.

25. Create HTML page that contain textbox, submit / reset button. Write php program to display this information and store into text file.

26. Write a php script to read data from txt file and display it in html table (the file contains info in format Name: Password: Email)

27. Write a PHP Script for login authentication. Design an html form, which takes username and password from user, and validate against stored username and password in file.

28. Write PHP Script for storing and retrieving user information from MySql table.

1. Design a HTML page, which takes Name, Address, Email and Mobile No. From user (register.php)

2. Store this data in Mysql database / text file.

3. Next page display all user in html table using PHP (display.php)

29. Write a PHP script for user authentication using PHP-MYSQL. Use session for storing username.

30. Using Ajax fetch information from a database with AJAX.

Practical Set -6 Website (Optional)

Students have to create a whole Website, which contains above topics in Website

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -I	Paper- V
Course Code: MSC-CA 115T(B)	Title of the Course: Software Testing
Credits: 02	Total Lectures: 30 Hrs.

Course Outcomes(Cos)

On completion of the course, students will be able to:

1. Learn the different types of testing tools
2. Apply the tools to write test cases and use different testing tool
3. Understand Security testing

UNIT I: SDLC

(Allotted lectures 3)

- What is Software development life cycle?
- Phases of SDLC
- Models of SDLC-Waterfall, Agile and Agile Scrum
- What is the difference between Waterfall and Agile?
- Advantages of using Agile Over Waterfall
- Agile Scrum and Lean Model
- User story, Story Points, Product backlog, Sprint backlog, Roles and responsibility of a scrum master and Product owner
- Meetings conducted in Agile Scrum

UNIT II: Types of Testing

(Allotted lectures 4)

- Static Testing/ Dynamic Testing
- Regression/ Retesting
- Usability/ accessibility
- Smoke / Sanity testing
- Chapter Testing/ Integration Testing/ System Testing
- UAT – Alpha Testing /Beta Testing
- White Box/Black box testing
- Functional/Non-functional Testing
- Performance Testing
- Load Testing 14
- Stress Testing
- Penetration Testing
- Cross platform / Cross device testing

UNIT III: STLC (Software Testing Life Cycle)

(Allotted lectures 4)

- Test Planning
- Test Plan

- What is a test Plan?
- Who creates a Test Plan?
- When is the Test Plan created
- Purpose of creating a Test Plan
- Components of a Test plan.
- Test design
- Test implementation and Execution
- Defect Reporting and tracking
- Defect life cycle
- Test closures
- Test metrics

UNIT IV: Automation Testing – Basics

(Allotted lectures 4)

- Introduction to Automation Testing
- What is Automation testing
- Benefits of Automation Testing
- Tool selection criteria

UNIT V: Security Testing

(Allotted lectures 3)

- The Basis of Security Testing
- Security Risks
- Information Security Policies and Procedures
- Security Auditing and Its Role in Security Testing

UNIT VI: Automation Testing with Testing Tools - Advanced

(Allotted lectures 7)

- Fundamentals of Selenium, overview, presentation, export features, installation, Selenium IDE and web driver
- Test application with Selenium IDE, RC VS web driver, how to create test drive with web drive
- Install Selenium IDE and Firebug
- Selenium IDE Script, Locators in Selenium IDE
- Source Control, Debugging Techniques, HTML, CSS
- Installation of Selenium Web Driver, Scripts in Web Driver
- Accessing Forms in Web Driver, Links & Tables

UNIT VII: Web Services Testing

(Allotted lectures 5)

- Service Oriented Architecture (SOA), who uses SOA
- Web Services, Why Web Services are Being Used? What is WSDL? Web Service Standards, toolsto test
- Web services, how to test web services, why to test web services
- Understanding WSDL, how is it used, specifications, document, and file, Retrieving and Viewing/ Inspecting WSDL file.
- SOAP, SoapUI tool, download and installation RESTFul Service 15
- Compare performance characteristics of different testing tools

Suggested Books:

1) Lessons Learned in Software Testing: By Cem Kaner , James Bach, Bret Pettichord, ISBN 9781283294928

2) Software Testing by Ron Patton, Lisa Crispin, Janet Gregory: Agile Testing : A Practical Guide for Testers and Agile Team

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -I	Paper- V
Course Code: MSC-CA 115P(B)	Title of the Course: Software Testing Lab
Credits: 02	Total Lectures: 60 Hrs.

Content and assignments:

Testers Qualities: Instructor to frame suitable activities to address following questions

1. What qualities testers should have?
2. As a tester, what qualities do you have? Provide with examples to justify your qualities?
3. Describe what you would like to do in a new job as a Software Tester?
4. Why A Tester needs to interact with various IT departments?

Why Testing Is Important?

1. Why is Testing Important? Justify with few good examples?
2. What happen if you not test software properly? Provide few examples and problems occurred due to not testing enough?
3. How rigorous testing helps IT companies?
4. Why Testing is important in Software Industry?
5. What are the advantages of starting early testing in SDLC?
6. Can testing be 100%? if not then why?
7. Provide various justifications for separating software testing from software development job?
Why not software developers should conduct complete testing rather than companies pay separately to software testers?

Different Types of Testing

1. What are the different types of Testing?
2. Explain each in not more than 5sentences:

- Unit Testing
- Integration Testing
- Alpha Testing
- System Testing
- Usability Testing
- Cross Browser Testing
- Multi-Platform Testing
- Performance Testing
- Security Testing
- User Acceptance Testing(UAT)
- Beta Testing

- a) What is Functional Testing? List various testing which come under this category?
- b) What is Non Functional Testing? List various testing which come under this

category?

c) How Acceptance testing is importance? Who does acceptance Testing? What we do in this testing?

3. List five key differences Smoke Testing Vs Sanity Testing?

4. Define Manual Vs Automated testing?

5. List as many differences as you can between white box testing and black box testing?

Test Cases

What is a Test Case?

List out level of Test Cases? What are fields of a Test case Template?

Write test cases for Gmail Login? Give at least 5 examples?

Design 3 positive Test cases and 3 negative test cases regarding: <http://newtours.demoaut.com>

What problems you face in writing test cases?

What is called a good Test Case? What is a bad Test Case?

What are guidelines for writing Test Cases?

What is Test Data? Why is it important?

Develop Test cases for Flight Reservation Application?

(Use standard guidelines to write your test cases. Cover all sections provided in SRS).

Test Plan

What is Test plan? What are the Contents of a Test Plan? Describe each.

Write an example of a Test Plan?

Develop Test Plan for Flight Reservation System Application? Make sure you cover all the sections and it should look like professional document?

Automation Testing Using Selenium

1) Download & Install Selenium WebDriver

2) Write different components in Selenium

3) Write First program in Selenium

4) Generate a Script using different web elements

5) Select CheckBox and Radio Button in Selenium WebDriver

6) Work on Drop down list, Drag & Drop, Error message capturing using webdriver

7) Work on Images, Web Tables, Web Calender, Log files, Property files in Selenium

8) Work on Selenium Form WebElement: TextBox, Submit Button, sendkeys(),click()

9) How to Verify Tooltip using Selenium WebDriver

10) How to Find All/Broken links using Selenium Webdriver

11) Testing browser, their types & configurations

12) Configure chromedriver, IEdriver exe files on grid

13) Configure JSON file format

14) Testing nodes using browser

15) Create Grid sample test case

16) Solve examples related to POM

Testing Assignments

- 17) Download & Install TestNG and configure Eclipse
- 18) Create Program in TestNG and Execute
- 19) Check reports & execute failed test cases in Selenium Webdriver
- 20) Run & Execute Test cases in Selenium using TestNG
- 21) Generate report using TestNG
- 22) Work on Maven - Configure, Generate report

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -I	Paper- V
Course Code: MSC-CA 116T/P	Title of the Course: Python Programming
Credits: 02	Total Lectures: 60 Hrs.

Course Objectives:

1. To introduce various concepts of programming to the students using Python.
2. Students should be able to apply the problem solving skills using Python

Course Outcomes: On completion of the course, student will be able to–

1. Express proficiency in the handling of strings and functions.
2. Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.
3. Identify the commonly used operations involving file systems and regular expressions

Unit I: Introduction to Python Scripting

(Allotted Lectures 6)

- Introduction to python
- Why Scripting is Useful in Computational Science
- Why Python? Script or Program?
- Installation of python
- Application of Python Basics of python
- How python interpreter and compiler works?
- Python identifiers and reserved words
- Lines and indentation, multi-line statements and Comments
- Input/output with print and input functions
- Command line arguments and processing command line arguments
- Standard data types - basic, none, Boolean (true && False), numbers
- Data type conversion
- Python basic operators (Arithmetic, comparison, assignment, bitwise logical)
- Python membership operators (in && not in)
- Python identity operators (is && is not)
- Operator precedence
- Control Statements, Python loops, iterating by subsequence index, loop control
- statements (break, continue, pass)

Unit II: Python strings

(Allotted Lectures 4)

- Concept, escape characters
- String special operations
- String formatting operator

- Single quotes, Double quotes, Triple quotes
- Raw String, Unicode strings, Built-in String methods
- Python Lists - concept, creating and accessing elements, updating && deleting lists,
- Basic list operations, reverse
- Indexing, slicing and Matrices
- built-in List functions
- Functional programming tools - filter (), map (), and reduce ()
- Using Lists as stacks and Queues, List comprehensions

Unit III: Python tuples, sets, Dictionary

(Allotted Lectures 5)

- Creating && deleting tuples, updating tuples, accessing values in a tuple, deleting tuple
- elements
- built- in tuple functions and operations
- Indexing, slicing and Matrices
- Sets - Concept, operations.
- Dictionary -Concept (mutable), Creating and accessing values in a dictionary, Updating dictionary, delete dictionary elements, Properties of dictionary keys, built-in dictionary functions and methods.

Unit IV: Functions

(Allotted Lectures 5)

- Defining a function (def) and Calling a function
- Function arguments - Pass by value, Keyword Arguments, default arguments
- Scope of variable - basic rules, Documentation Strings, Variable Number of Arguments,
- Call by Reference, Order of arguments (positional, extra && keyword)
- Anonymous functions
- Recursion
- Treatment of Input and Output Arguments
- Unpacking argument lists
- Lambda forms
- Function Objects
- function duck typing && polymorphism
- Generators (functions and expressions) and iterators

Unit V: CUI calculator

- Designing CUI calculator
- Develop a menu
- Develop the functionality

Unit VI: Files and Directories

(Allotted Lectures 03)

- Creating files and Operations on files (open, close, read, write)

- File object attributes, file positions, Listing Files in a Directory
- Testing File Types
- Removing Files and Directories
- Copying and Renaming Files
- Splitting Pathnames
- Creating and Moving to Directories
- Traversing Directory Trees
- Illustrative programs: word count, copy file

Unit VII: Python Classes and Objects

(Allotted Lectures 06)

- Object oriented programming and classes in Python creating classes, instance objects, accessing members
- Data hiding (the double underscore prefix)
- Built-in class attributes
- Garbage collection: the constructor
- Overloading methods and operators
- Inheritance - implementing a subclass, overriding methods
- Recursive calls to methods
- Class variables, class methods, and static methods

Unit VIII: Python Exceptions

(Allotted Lectures 02)

- Exception handling: assert statement
- Except clause - with no exceptions and multiple exceptions
- Try - finally, raising exceptions, user-defined exceptions.

Unit IX: UI devotement

- Introduction to UI (User Interface)
- GUI Programming
- GUI components
- Designing a GUI calculator
- Develop the functionality of GUI calc.

Unit X: Database programming in python

- Introduction to database server
- Introduction to SQLite 3
- Introduction to database programming
- Setting the environment
- Basics of database operation
- INSERT and UPDATE operation
- VIEW and DELETE operation
- Develop menu based Contact App

Suggested Books:

1. Introducing Python- Modern Computing in Simple Packages – Bill Lubanovic, O,,Reilly Publication
2. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress
3. Practical Programming: An Introduction to Computer Science Using Python 3, Paul Gries, et al., Pragmatic Bookshelf, 2/E 2014
4. Introduction to Computer Science Using Python- Charles Dierbach, Wiley Publication
Learning with Python “, Green Tea Press, 2002
5. E-Books: python_tutorial. pdf, python_book_01.pdf 6. Beginning Programming with Python for Dummies Paperback – 2015 by John PaulMueller 7. A Beginner’s Python Tutorial: http://en.wikibooks.org/wiki/A_Beginner%27s_Python_Tutorial.

Sample Python Assignments

1. Create a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them the year that they will turn 100 years old.
2. Write a program to check whether the number is even or odd, print out an appropriate message to the user.
3. Write a program, which will find all such numbers, which are divisible by 7.
4. Write a program, which can compute the factorial of a given numbers.
5. Write a program that prints out all the elements of the list that are less than 10.
6. Write a program that returns a list that contains only the elements that are common between the lists (without duplicates). Make sure your program works on two lists of different sizes.
7. To determine whether the number is prime or not.
8. To check whether a number is palindrome or not. (Using recursion and without recursion).
9. Write a program that asks the user how many Fibonacci numbers to generate and then generates them.
10. Write a program (using functions!) that asks the user for a long string containing multiple words. Print back to the user the same string, except with the words in backwards order. E.g “ I am Msc student” is :”student Msc am I”
11. Write a program to implement binary search to search the given element using function.
12. Given a .txt file that has a list of a bunch of names, count how many of each name there are in the file, and print out the results to the screen.

13. Write a program that takes a list of numbers (for example, a = [5, 10, 15, 20, 25]) and makes a new list of only the first and last elements of the given list.
14. Write a program that accepts sequence of lines as input and prints the lines after making all characters in the sentence capitalized.
15. Write a program that accepts a sentence and calculate the number of letters and digits.
16. Write a program that accepts a sentence and calculate the number of upper case letters and lower case letters.
17. Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument.
18. Write a Python program of recursion list sum.
19. Write a Python program to solve the Fibonacci sequence using recursion.
20. Write a Python program to get the sum of a non-negative integer.
21. Write a Python program to find the greatest common divisor (gcd) of two integers
22. Write a Python function that takes a list and returns a new list with unique elements of the first list.
23. Write a Python function to check whether a number is perfect or not
24. Write a Python program to read a file line-by-line store it into an array.
25. Write a Python program to count the number of lines in a text file.
26. Write a Python program to count the frequency of words in a file.
27. Write a Python program to copy the contents of a file to another file
28. Write a Python program to read a random line from a file
29. Write a Python class to reverse a string word by word. Input string: 'hello.py' Expected Output: '.py hello'
30. Write a Python class named Rectangle constructed by a length and width and a method, which will compute the area and perimeter of a rectangle. –
31. Write a Python class named Circle constructed by a radius and two methods, which will compute the area and the perimeter of a circle

Semester II

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -II	Paper -I
Course Code: MSC-CA 211T	Title of the Course: ASP.NET
Credits: 04	Total Lectures: 60 Hrs.

Course Outcomes (Cos)

1. Understand the ASP.NET web application execution model.
2. Create and modify multi-page Web Form applications that involve and demonstrate features such as flow control, the use of style sheets, state management, data access, data binding, security, and data verification and validation.

Unit I Introduction to .NET Framework

(Allotted Lectures 10)

- The .NET Framework – an Overview
- Framework Components
- Framework Versions
- Types of Applications which can be developed using Microsoft.NET
- MS.NET Base Class Library
- MS.NET Namespaces
- MSIL
- Dot Net Compilation Process
- The Common Language Runtime(CLR)
- Managed Code
- MS.NET Memory Management / Garbage Collection
- Common Type System(CTS)
- Common Language Specification(CLS)
- JIT Compilers
- VisualStudio.NET

Unit II Introduction to C#

(Allotted Lectures 10)

- Introduction to C#

- Building Blocks of C#
- Type Conversion
- Functions Exception Handling
- Classes in C#
- Access Modifiers
- Interfaces
- Properties
- Inheritance

Unit III Introduction to ASP.NET

(Allotted Lectures 10)

- What is ASP.NET?
- ASP.NET Page Life Cycle
- Architecture of ASP.NET
- Forms, WebPages, HTML forms
- Request & Response in Non-ASP.NET pages
- Using ASP.NET Server Controls
- Overview of Control structures
- Functions

Unit IV Event Driven Programming

(Allotted Lectures 06)

- HTML events
- ASP.NET Web control events
- Event driven programming and postback

Unit V Database Connectivity using ADO .NET

(Allotted Lectures 14)

- Databases and ADO.NET
- Architecture, Components of ADO.NET
- Data Provider in DotNet
- Connection in ADO.Net
- Command in ADO.Net
- Data Reader in ADO.Net
- Data Adapter in ADO.Net

- Data Set
- Data Binding

Unit VI ASP.NET Server Controls

(Allotted Lectures 10)

- Introduction to ASP.NET Controls
- HTML Server Controls
- Web Server Controls
- Validation Controls
- Session and Cookies

Suggested Books:

1. C# 6.0 and the .NET 4.6 Framework by Andrew Troelsen and Philip Japikse
2. Programming Entity Framework by Julia Lerman
3. Pro ASP.Net MVC 5 (Expert's Voice in ASP.Net) by Adam Freeman

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -II	Paper -II
Course Code: MSC-CA 212T	Title of the Course: Operating System Concepts
Credits: 04	Total Lectures: 60 Hrs.

Course Outcomes (Cos)

1. To understand the basic components of a computer operating system, and the interactions among the various components.
2. The course will cover an introduction on Unix internal, commands, file system, shell structure and Vi-editor.

Unit I: Introduction to Operating System Concepts. (Allotted Lectures 10)

- Introduction to Operating System Concept.
- Different services provided by Operating System to User.
- Introduce the concept of Process, Process States, Process Control Block, User Interface, System Calls.

Unit II: Introduction to UNIX concepts. (Allotted Lectures 05)

- Introduction to Unix Operating System.
- Features of Unix.
- Architecture of the Unix Operating System.
- Introduction to File System and Process Environment.
- Working with Unix
- The login prompt.
- General features of Unix commands/ command structure.
- Command arguments and options.
- Understanding of some basic commands such as echo, printf, ls, who, date, passwd, cal, Combining commands

Unit III: Using Unix Commands. (Allotted Lectures 8)

- What is Command.
- Meaning of Internal and external commands.
- The type command: knowing the type of a command and locating it.
- The man command knowing more about Unix commands and using Unix online manual pages. The man with keyword option and whatis.
- Knowing the user terminal, displaying its characteristics and setting characteristics.
- The root login. Becoming the super user: su command. The /etc/passwd and /etc/shadow files.

- Commands to add, modify and delete users.

Unit IV: Handling Files under Unix.

(Allotted Lectures 06)

- Unix files.
- Naming files. Basic file types.
- Organization of files. Standard directories.
- Parent child relationship.
- The home directory and the HOME variable.
- Reaching required files- the PATH variable, manipulating the PATH, Relative and absolute pathnames.
- Directory commands – pwd, cd, mkdir, rmdir commands.
- The dot (.) and double dots (..) notations to represent present and parent directories and their usage in relative path names.
- File related commands – cat, mv, rm, cp, wc and od commands.
- File attributes and permissions and knowing them.
- The ls command with options.
- Changing file permissions: the relative and absolute permissions changing methods

Unit V: Managing Processes in Unix.

(Allotted Lectures 06)

- Process Concept.
- Mechanism of process creation.
- Parent and child process.
- The ps command with its options.
- Executing a command at a specified point of time: at command.
- The nice command.
- Background processes. The bg and fg command. The kill command.
- The find command with illustrative example.

Unit VI: Using Shells

(Allotted Lectures 8)

- What is Shell Under Unix?
- Different types of shells in Unix.
- The shells interpretive cycle.
- Wild cards and file name generation.
- Removing the special meanings of wild cards.
- Three standard files and redirection.
- Connecting commands: Pipe.
- The grep, egrep commands.

Unit VII: Using Vi Editor

(Allotted Lectures 5)

- Introduction to the Vi editor.
- Different ways of invoking and quitting vi.
- Different modes of vi. Input mode commands.
- Command mode commands.
- The ex-mode commands.

- Illustrative examples Navigation commands.

Unit VIII: Shell Programming

(Allotted Lectures 12)

- Shell programming.
- Ordinary and environment variables.
- The. profile. Read and read-only commands.
- Command line arguments
- exit and exit status of a command.
- Logical operators for conditional execution.
- The test command and its shortcut.
- The if, while, for and case control statements.
- The set and shift commands and handling positional parameters.
- The here (<<) document and trap command.
- Simple shell program examples.
- File inodes and the inode structure.
- File links – hard and soft links. Filters.
- Head and tail commands.
- Cut and paste commands.
- The sort command and its usage with different options.

Suggested Books:

1. Operating System Concepts - Siberchatz, Galvin, Gagne (8th Edition)
2. Unix Concepts and Applications., Sumitabha Das., 4th Edition., Tata McGraw Hill
3. UNIX and Shell Programming, Behrouz A. Forouzan, Richard F. Gilberg :
Cengage Learning – India Edition. 2009.
4. UNIX & Shell Programming, M.G. Venkatesh Murthy, Pearson Education.
5. Linux Command Line and Shell Scripting Bible, Richard Blum , Christine
Bresnahan , 2ndEdition , Wiley,2014

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -II	Paper -III
Course Code: MSC-CA 213T	Title of the Course: Advance Networking Concepts
Credits: 04	Total Lectures: 60 Hrs.

Course Outcomes (Cos)

1. Describe the general principles of data communication.
2. Describe how computer networks are organized with the concept of layered approach.
3. Evaluate the challenges in building networks and solutions to those.
4. Explain the way protocols currently in use in the Internet work and the requirements for designing network protocols.

Unit I: Basic Network Concepts

(Allotted Lectures 7)

- Introduction to Computer Networks
- Element of Network
- Type of Network: LAN, MAN, WAN
- Network Topologies: Bus, Star, Mesh, Ring, etc.
- Data communication & Representation
- Network Operating System

Unit II: Networking Device and media connection

(Allotted Lectures 7)

- Common LAN Media: STP, UTP, Coaxial Cable, Optical Fiber, Making and Testing Cable, Straight thru cable, Cross over Cable, Connector, Jack, Patch Panels, NIC, Repeater and Hub & its type, Bridges and its Types, Switch and Router

Unit III: Network Model

(Allotted Lectures 8)

- Description of Seven Layers of OSI Model and TCP/IP Model
- Comparison of OSI & TCP/IP Model
- Physical and Data Link Layer
- Network and Transport Layer
- Presentation and Session Layer
- Application Layer

Unit IV: Bridging/Switching and VLAN Concepts

(Allotted Lectures 10)

- Switching Services
- Configuration of Switches
- Store and Forward Techniques
- VLAN Basic: VLAN Membership, Routing between VLAN, Configuration of VLAN

Unit V: Cisco Basics, IOS & Network Basic**(Allotted Lectures 10)**

- Examine Router elements
- Router Boot Sequence
- managing configuration of Cisco Router
- Basic Cisco IOS command
- Prepare the Initial configuration of Router

Unit VI: Routing Protocol & Network Management**(Allotted Lectures 10)**

- Describe the three basic method used in Networking
- Routing Protocol: RIP, IGRP, EIGRP, OSPF
- Routing Protocol and configuration, configure standard access list to Filter IP traffic, Monitor and verify selected Access list operation on Router, Troubleshoot Network Basic Problem

Unit VII: Fundamental of Network Security**(Allotted Lectures 8)**

- Information Security Fundamental
- Goals of Security confidentiality
- Network Security Protocol: SSL, TLS, IPSec, SSH
- Antivirus, Network scanners, Firewall, Log analysis

REFERENCE BOOKS

1. Data and Computer Communication. “William Stallings”, Prentice, Hall of India Private Limited.
2. CCNA Cisco certified Network Associate Study Guide By Todd Lammle 5th edition (BPB) .
3. ONLINE RESOURCES www.tutorialspoint.com/listtutorials/networking
www.comptechdoc.org/independent/networking/guide/ www.e-tutes.com [Type here]

Assignments

1. Define the meaning of the term Computer Network.
2. Define the term peer-to-peer network.
3. Describe the problem with peer-to-peer networks.
4. Define the term network cable.
5. Define the term client/server network.
6. Define the term Local Area Network (LAN). Make sure you describe how large of an area it covers.
7. Define the term Wide Area Network (WAN). Again, make sure you describe how large of an area it covers.
8. What is Guided and Unguided Media?

9. Define the term Router,Switch,Hub
10. Define IP Address and its class .What is Private and Public IP Address.
11. What is difference between Transmission Control Protocol and User Datagram Protocol?
12. Describe TCP/IP Model and Cisco Model.
13. Basic Configuration of Managed Switch
14. What is DHCP & DNS and how it works on client/Server Architecture.
15. Basic Configuration of Cisco Router
16. Configure different mode on Cisco Router: User, Axualry, Global Configuration.
17. How to connect different network using Static Routing?
18. Implantation of different routing Protocol like RIP, EIGRP, IGRP.
19. Implantation of OSPF Protocol on Cisco Router.
20. Implementation of Access list Concepts

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -II	Paper -IV
Course Code: MSC-CA 214P	Title of the Course: ASP.NET Lab
Credits: 04	Total Lectures: 120 Hrs.

DOT NET Assignments

1. Write C# program to swap two numbers
2. Write C# program to create following output 1 2 3 4 5 6 7 8 9 10
- 3 Create windows c# application program for open file, save file, fold browser dialogue box
4. Create c# dialogue boxes for font dialogue, color dialogue & print dialogue box
- 5.Create windows c# application program for split container control and review controls
- 6.Write a web application in Asp.net using c# to select date from calendar control and display name of the day, name of the month from the selected date.
- 7.Create ASP.Net c# web application for registration and login form with database connectivity.
8. Write a web application in asp.net using c# to design following web page and use Required Field validator (For Name, Address and E-mail Id) and Regular Expression
- 9.Write a web application in asp.net using c# to design a master page with two content pages, one content page will display the student's personal information and another will show the student's academic information
10. Write a web application in asp.net using c# to design following web page, accept fruit name from the user and add it to the list box on clicking of add button, user can select multiple fruit names from list box, click on submit button all selected fruit names should get displayed on label control
11. Write a web application in asp.net using c# to accept the user's information and on click on submit button entered information should get displayed into next page(session).
12. Write a web application in asp.net using c# to create a table book (bid, title, author_name, publication, edition, price). Insert records into table and display appropriate message using label server control.
13. Write a web application in asp.net using c# to search the number of player plays in "Cricket" and display result in GridView. Game (gid, gname, no_of_players, duration)
14. Write a web application in asp.net using c# to insert records into table hospital (hno, hname, no_of_dept, doctor_name, date_of_registration). Display hospital details in GridView.

15. Write a web application in asp.net using c# to update number of movies of actor “XYZ”. Display updated records in GridView. Actor (aid, aname, no_of_movies)
16. Write a web application in asp.net to create Emp (Eno, EName, Sal) table. Insert at least 5 records into the table and display the details of given employee.
17. Write web application for Calculator.
18. Write web application in asp.net to scroll the text continuously from left to right and vice versa.
19. Write web application in asp.net to display the data from database on to the report.
20. Write web application in asp.net to validate Email of use

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -II	Paper - V
Course Code: MSC-CA 215T(A)	Title of the Course: Django
Credits: 02	Total Lectures:30 Hrs.

Course Outcomes (Cos)

1. To Design Build and deploy robust Django web apps
2. Integrate with RESTful web services

Unit I: Introduction to Django

(Allotted Lectures 7)

- What is Django?
- Django and Python
- Django’ s takes on MVT: Model, View and Template
- DRY programming: Don’t Repeat Yourself
- How to get and install Django

Unit II: Getting started with Django

(Allotted Lectures 7)

- About the 3 Core Files: models.py, urls.py, views.py
- Setting up database connections with SQLite and MySQL
- Managing Users & the Django admin tool
- Installing and using ‘out of the box’ Django features

Unit III: Django URL Patterns, Views and Forms

(Allotted Lectures 8)

- Designing a good URL scheme
- Generic Views
- Form classes
- Validation
- Authentication
- Advanced Forms processing techniques

Unit IV: REST APIs

(Allotted Lectures 8)

- Django REST framework

- Requests and Responses
- Class Based Views
- Authentication and Permission

Suggested Books:

- 1) Django for Beginners: Build websites with Python and Django Kindle Edition by William S. Vincent
- 2) Two Scoops of Django 1.11: Best Practices for the Django Web Framework

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -II	Paper -V
Course Code: MSC-CA 215P(A)	Title of the Course: Django Lab
Credits: 02	Total Lectures: 60 Hrs.

Django Lab Assignments

- 1) Create a web page that outputs “Hello Django”.
- 2) Create a Django built-in login form with password validation.
- 3) Design Django Admin App site in which, you can • Add new user. • Modify existing user. • Search and filter users. • Sort the user data by clicking on the column header. • Delete user
- 4) Create Django login page with additional Links as shown below
- 5) Create Django templates that represent the HTML GUI that the client can view.
- 6) Build Django application that illustrate template inheritance
- 7) Build, handle, submit & validate HTML forms in the Django way.
- 8) Write a Python program to connect a database and create SQLite table within the database.
- 9) Write a Python program to list the tables of given SQLite database file.
- 10) Write a Python program to create a table and insert some records in that table. Finally select all rows from the table and display the records.
- 11) Write Python Django program to insert, update and delete record in to database table using GUI.
- 12) Create Django app that will print records of employee having attributes first name, last name and Designation from Django admin.
- 13) Build the Django form which will accept the name, email and address. Validate Name field. Name should start with ‘A’, else display error message.
- 14) Develop Django models and model relationships for customized application.
- 15) Query the created models & connect to MySQL database.
- 16) Using Object Relational Mapper(ORM), design Django app that can insert and access the data from the student’s database
- 17) Create Django authentication (or auth) app that provides a wide array of tools for User management ranging from authenticating users to resetting passwords.
- 18) Design Django application that will create contact-us page as shown below And after submitting information it displays Thank you message on the same page.

19) Build REST web services and mapping webURLs with view functions & perform complex routing.

20) Use the built-in HTTPsession object parameters to control the session behaviours/patterns

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -II	Paper -V
Course Code: MSC-CA 215T(B)	Title of the Course: Cloud Computing (Design of web services)
Credits: 02	Total Lectures: 30 Hrs.

Course Outcomes (Cos):

1. To create and use Web Services. Creating RESTful Services.
2. To understand the details of web services technologies like WSDL, UDDI, SOAP
3. To learn how to implement and deploy web service client and server
4. To explore interoperability between different frameworks
5. To understand the concept of RESTful system.

Unit I Web Service

(Allotted Lectures 7)

- Introduction to Web Services The definition of web services
- basic operational model of web services
- tools and technologies enabling web services
- benefits and challenges of using web services
- Web Services Architecture and its characteristics
- core building blocks of web services
- standards and technologies available for implementing web services
- web services communication models
- basic steps of implementing web services.

Unit II SOAP

(Allotted Lectures 8)

- SOAP Simple Object Access Protocol
- Inter-application communication and wire protocols
- SOAP as a messaging protocol
- Structure of a SOAP message
- SOAP communication model
- Building SOAP Web Services
- developing SOAP Web Services using ASP.Net
- Error handling in SOAP
- Advantages and disadvantages of SOAP.

Unit III WSDL and UDDI

(Allotted Lectures 9)

- WSDL and UDDI WSDL in the world of Web Services
- Web Services life cycle
- WSDL Document Structure
- WSDL bindings
- WSDL Elements

- limitations of WSDL
- UDDI – UDDI Registries
- uses of UDDI Registry
- Programming with UDDI
- UDDI data structures
- support for categorization in UDDI Registries
- Publishing API,
- Publishing information to a UDDI Registry
- searching information in a UDDI Registry
- deleting information in a UDDI Registry
- limitations of UDDI.

Unit IV REST

(Allotted Lectures 6)

- The REST Architectural Introducing HTTP
- The core architectural elements of a RESTful system
- Description and discovery of RESTful web services
- ASP.Net Core and Entity Framework for building RESTful web services
- JSON message format and tools and frameworks around JSON
- Build RESTful web services with Web APIs
- The Description and Discovery of RESTful Web Services
- Design guidelines for building RESTful web services
- Secure RESTful web services.

Suggested Books:

1. C# Web Services: Building .NET Web Services by Zach Greenvoss-ChristianNagel WROX Press Ltd.
2. Building RESTful Web Services with .NET Core by Gaurav Arora, Tadi Dash Packt Publishing Limited
3. XML, Web Services, and the Data Revolution F. P. Coyle Pearson Education.
4. Building Web Services with Java, 2nd Edition S. Graham and others Pearson Edn., 2008.
5. J2EE Web Services Richard Monson-Haefel Pearson Education.
6. Java Web Services Programming, R.Mogha, V.V.Preetham Wiley India Pvt.Ltd.
7. XML, Web Services, and the Data Revolution F.P.Coyle Pearson Education

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -II	Paper -V
Course Code: MSC-CA 215P(B)	Title of the Course: Cloud Computing Lab Web Services Laboratory
Credits: 02	Total Lectures: 60 Hrs.

Assignment 1 Create 'Dynamic Web Project', which will host your web service functionality to greet the user according to server time and create 'Dynamic Web Project', which will host the client application that will send user name and test the web service

Assignment 2 Create 'Dynamic Web Project', which will host your web service functionality to convert Celsius to Fahrenheit and create 'Dynamic Web Project', which will host the client application that will send Celsius and test the web service.

Assignment 3 Create 'Dynamic Web Project', which will host your web service functionality to find the factorial of given number and create 'Dynamic Web Project', which will host the client application that will send positive integer number and test the web service.

Assignment 4 Create 'Dynamic Web Project', which will host your web service functionality to validate email id (use regular expression) and create 'Dynamic Web Project', which will host the client application that will send email id and test the web service

Assignment 5 Create 'Dynamic Web Project', which will host your web service functionality to validate user name and password (use database for storing username and password) and create 'Dynamic Web Project', which will host the client application that will send user name and password and test the web service.

Assignment 6 Create 'Dynamic Web Project', which will host your web service functionality to select employee details (use database for storing emp details (eno, ename, designation, salary)) and create 'Dynamic Web Project', which will host the client application that will send employee name and display the details.

Assignment 7 Create 'Dynamic Web Project', which will host your web service functionality to select Movie details (Movie (mno, mname, release_year) and Actor (ano, aname), 1: M cardinality) and create 'Dynamic Web Project', which will host the client application that will send actor name and display the details.

Assignment 8 Create 'Dynamic Web Project', which will host your web service functionality to validate mobile no (use regular expression: should contain only 10 numeric no) and create 'Dynamic Web Project', which will host the client application that will send mobile no and test the web service

Assignment 9 Create 'Dynamic Web Project', which will host your web service functionality to convert Rupees to Dollar, Pound, Euro,.. and create 'Dynamic Web Project', which will host the

client application that will send amount in Rupees & type of conversion and tests the web service.

Assignment 10 Create 'Dynamic Web Project', which will host your web service functionality to give the suggestion for given key word and create 'Dynamic Web Project', which will host the client application that tests the web service.

Assignment 11 Create 'Dynamic Web Project', which will host your web service functionality to find area and volume of the circle and create 'Dynamic Web Project', which will host the client application that tests the web service.

Assignment 12 Create 'Dynamic Web Project', which will host your web service functionality to find number of vowels in the given string and create 'Dynamic Web Project', which will host the client application that tests the web service.

Assignment 13 Create 'Dynamic Web Project', which will host your web service functionality to convert decimal number to Binary, Octal, Hexa Decimal and create 'Dynamic Web Project', which will host the client application that will send decimal number & type of conversion and test the web service.

Assignment 14 Create 'Dynamic Web Project', which will host your web service functionality to validate user name and password (use database for storing username and password) and create 'Dynamic Web Project', which will host the client application that will send user name and password and test the web service.

Assignment 15 Create 'Dynamic Web Project', which will host your web service functionality for returning book price and create 'Dynamic Web Project', which will host the client application that will send Book Name

Assignment 16 Create 'Dynamic Web Project', which will host your web service functionality to find Weather report of the current date and create 'Dynamic Web Project', which will host the client application that tests the web service.

Assignment 17 Create 'Dynamic Web Project', which will host your web service functionality to update the date and time for flight booking for any airways(JET) (use database for storing Flight details) and create 'Dynamic Web Project', which will host the client application that will send request (eg: Make MyTrip) to test the web service.

Class: M.Sc. (Computer Applications)

Faculty of Science

Semester -II	Paper -V
Course Code: MSC-CA 216T/P	Title of the Course: Data ware housing and data mining
Credits: 02	Total Lectures: 60 Hrs.

Course Outcome:

1. Demonstrate an Understanding and knowledge of the Data Warehousing Data Mining and Business Intelligence
2. Explain the Data Analysis and Knowledge Delivery Stages.
3. Organize and Prepare the Data Needed for Data Mining Using Pre Preprocessing Techniques
4. Implement the Appropriate Data Mining Methods Like Association Classification Clustering
5. Apply Data Mining Methods to Solve Practical Problems. (Analyze the Problem Domain Data Collection Preprocessing Apply Suitable Data Mining Method Interpret and Visualize the Results and Provide Decision Support.)
6. Understand the concept of Business Intelligence and different types of databases.

UNIT-I

- Data Ware Housing: Definition, Usage and Trends
- DBMSVs. Data Warehouse
- Data Marts, Metadata
- Data Mining: Definition & Application
- DBMS Vs. Data Mining
- KDD Versus Data Mining
- Data Mining Techniques
- Business Intelligence Introduction
- Cycle of a Business Intelligence Analysis
- Data Preprocessing: Need, Data Cleaning, Integration & Transformation

UNIT-II

- Data Warehouse Process & Architecture
- OLAP and OLTP Definitions
- Difference Between OLAP and OLTP
- Dimensional Analysis
- Multidimensional Data Mode
- Data Cubes Drill-Down and Roll-Up – Slice and Dice or Rotation Operations
- Types of OLAP ROLAP vs. MOLAP

- Schemas for Multidimensional Database: Stars Snowflakes and Fact Constellations
- Relation between Business Intelligence and Data Warehouse
- Business Intelligence User Types
- Standard Reports, Interactive Analysis and Ad Hoc Querying
- Parameterized Reports and Self-Service Reporting
- Dimensional Analysis
- Alerts/Notifications Visualization: Charts, Graphs, Widgets, Scorecards and Dashboards

UNIT-III

- Association Rule Mining
- Single-Dimensional Boolean Association Rules
- Incremental Database
- Dynamic Database APriori Algorithm FP Growth
- Multi-Level Association Rules from Transaction Databases

UNIT-IV

- Classification and Prediction Concepts of Decision Tree
- Induction and Bayesian Classification
- Cluster Analysis
- Categorization of Methods Partitioning Methods: K-Means Algorithm, Outlier Analysis, Hierarchical Methods

UNIT-V

- Emerging Technologies - Machine Learning
- Big Data: Introduction
- Importance Four vs Data Mining for Business Applications Like Fraud Detection Market Segmentation, Retail Industry, Telecommunications Industry, Banking & Finance and CRM etc. Spatial Databases, Multimedia Databases
- Time Series and Sequence Data
- Text Databases
- Web Mining Concepts.

Suggested Books:

1. Jiawei Han Michelinekamber “Data Mining Concepts and Techniques” Morgan Kaufmann Publishers
2. Arun K Pujari “Data Mining Concepts and Techniques” University Press
3. G.K.Gupta“Data Mining with Case Studies” PHI Pvt Ltd
4. Data Mining: Concepts and Techniques, Han, Elsevier ISBN:9789380931913/
5. Data Mining – Introductory and Advanced Topics, Pearson Education

