Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon

'A' Grade
NAAC Re-Accredited
(3rd Cycle)

Choice Based Credit System (CBCS)

Syllabus For

T.Y.B.Sc.

Computer Science

(With effect from June 2020)

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T.Y.B.Sc. (Computer Science)
(w.e.f. June-2020)
Structure

Semester – V

Discipline	Course Type	Course Code	Course Title	Credits	Hours/Week (Clock Hours)	Total Teaching hours	Marks (Total 100)	
							CA	UA
DSC	Core I	CS - 501	System Programming	3	3	45	40	60
	Core II	CS – 502	Database Management System	3	3	45	40	60
	Core III	CS – 503	Software Engineering	3	3	45	40	60
	Core IV	CS – 504	Computer Aided Graphics	3	3	45	40	60
DSC Skill Enhancement Course (SEC)	Skill Based	CS – 505	Python Programming - I	3	3	45	40	60
DSC Elective Course	Elective Course (Any One)	CS – 506 (A)	**Elective –A** Internet Programming using PHP	3	3	45	40	60
		CS – 506 (B)	**Elective –B** JAVA Programming-I					60
DSC	Core (Practical)	CS – Lab - 507	Lab on Python Programming - I	2	4 (per batch)	60	40	60
		CS – Lab 508	Lab on Computer Aided Graphics	2	4 (per batch)	60	40	60
		CS – Lab 509	**Elective –A** Lab on Internet Programming using PHP	2	4 (per batch)	60	40	60
			Elective –B Lab on JAVA Programming –I					
Non Credit Audit Course	Elective Audit Course (Any One)	AC – 501 (A)	NSS	No Credit	2	30	100	-----
		AC – 501 (B)	NCC					
		AC – 501 (C)	Sport					

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Structure

Semester – VI

Discipline	Course Type	Course Code	Course Title	Credits	Hours/Week (Clock Hours)	Total Teaching hours	Marks (Total 100)	
							CA	UA
DSC	Core I	CS - 601	Operating System	3	3	45	40	60
	Core II	CS – 602	R -DBMS	3	3	45	40	60
	Core III	CS – 603	Computer Network	3	3	45	40	60
	Core IV	CS – 604	Theoretical Computer Science	3	3	45	40	60
DSC Skill Enhancement Course (SEC)	Skill Based	CS – 605	Python Programming - II	3	3	45	40	60
DSC Elective Course	Elective Course (Any One)	CS – 606 (A)	**Elective –A** Web Programming using ASP.NET	3	3	45	40	60 60
		CS – 606 (B)	**Elective –B** JAVA Programming-II					
DSC	Core (Practical)	CS – Lab - 607	Lab on Python Programming II	2	4 (per batch)	60	40	60
		CS – Lab 608	Lab on RDBMS	2	4 (per batch)	60	40	60
		CS – Lab 609	**Elective –A** Lab on ASP.NET **Elective –B** Lab on JAVA Programming II	2	4 (per batch)	60	40	60
Non Credit Audit Course	Elective Audit Course (Any One)	AC – 601 (A)	Soft Skill	No Credit	2	30	100	-----
		AC – 601 (B)	Yoga					
		AC – 601 (C)	Practicing Cleanliness					

Semester - V

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June -2020)
DSC (UG-CS-501) System Programming
Semester-V

Total lectures: 45
Total Marks: 90

Course Objectives:
- To understand use and development of software tools.
- To understand the design structure of Assembler and macro preprocessor
- To understand the design structure of compiler
- To understand the functions of linkers and loaders

Course Outcomes:
- Understand details about system software
- To do basic system program like development of editors lexical analyzers etc
- Students are familiar with language processing activities- functions of translators, loader and linkers

Unit-1 Introduction [L: 05, M: 10]
1.1 Types of program – System program and Application program
1.2 Difference between system programming and application programming.
1.3 Goal of system software
1.4 components of system software
1.5 View of system software
Unit-2 Software Tools [L: 05, M: 10]
2.1 What is a Software Tools?
2.2 Software Tools for Program Developments
2.3 Editors
2.4 Debug Monitors
2.5 Programming Environments
Unit-3 Overview of Language Processors [L: 5, M:12]
3.1 Programming Languages and Language Processors
3.2 Language Processing Activities
3.3 Fundamentals of Language Processing
Unit-4. Assembler [L:10,M:16]
4.1 Definition.
4.2 Features of assembly language, advantages
4.3 Statement format, types of statements
4.4 Constants and Literals.
4.5 Advanced assembler directives
4.6 Design of assembler – Analysis Phase and Synthesis Phase.
4.7 Overview of assembly process
4.8 Pass Structure of Assembler – One pass, two pass assembler.
4.9 Problems of One-pass assembler
4.10 Design of Two-pass Assembler
Unit-5. Macro and Macro Preprocessor [L: 05, M: 14]
5.1 Macro Definition and Call

5.2 Macro Expansion
5.3 Nested Macro Calls
5.4 Tables used in Macro
5.5 Advanced Macro Facilities
5.6 Design of Macro Preprocessor
Unit-6. Compiler [L: 10, M:14]
6.1. What is Compiler?
6.2. Scanning and Parsing
6.2.1. Programming Language Grammars
6.2.2. Scanning
6.2.3. Parsing
6.3. Language Processors Development Tools
Unit-7. Linkers and Loaders [L: 05, M: 14]
7.1 Introduction
7.2 Relocation and Linking Concepts
7.3 Self Relocating Programs
7.4 Linking for Overlays
7.5 Dynamic Linking
7.6 Loaders

References:
1. D.M. Dhamdhere, "Systems Programming", ISBN : 9780071333115, Tata McGraw-Hill Education, 2011
2. D.M. Dhamdhere, "Systems programming and operating system". ISBN: 978-0074635797, Tata Mcgraw Hill Education Private Limited
3. John Donovan, "System programming.", ISBN: 978-0-07-46

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC (UG-CS-502): Database Management System
Semester-V

Total lectures: 45
Total Marks: 90

Course Objectives

- To understand the fundamental concepts of database.
- To understand user requirements and frame it in data model.
- To understand creations, manipulation and querying of data in databases.

Course Outcomes

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

- Solve real world problems using appropriate set, function, and relational models.
- Design E-R Model for given requirements and convert the same into database tables.
- Use SQL.

Content

1. Introduction of DBMS   **L 12: M 16**
   1.1. Overview, Definition
   1.2. Types of DBMS
   1.3. Describing & storing data (Data models (relational,hierarchical, network)),
   1.4. Levels of abstraction , data independence,
   1.5. Queries in DBMS (SQL : DDL,DML,DCL,TCL), Users of DBMS, Advantages of DBMS

2. Conceptual Design (E-R model)   **L 10 : M 16**
2.1. Overview of DB design,
2.2. ER data model (entities, attributes, entity sets, relations, relationship sets) ,
2.3. Conceptual design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary)

3. Relational data model   **L 10 : M 18**
   3.1. Relations (concepts, definition),
   3.2. Conversion of ER to Relational model ,
   3.3. Integrity constraints (key, referential integrity, general constraints)
3.4 Codd's Rules, Functional Dependency, Data Normalization (1NF,
       2NF, 3NF, BCNF)

4. Relational algebra   **L 08 : M 15**
   4.1. Preliminaries
   4.2. Relational algebra (selection, projection, set operations, renaming, joins,
division)

5. Database Implementations   **L-08 M:12**
   5.1 Database security
   5.2 Database integrity
   5.3 Transaction Concept
   5.4 Transaction State

5.5 Transaction Properties (ACID)

6. Concurrency control, Backup & recovery:-   **L-09**   **M-12**

      6.1Lock-Based protocol,

6.2 Timestamp-Based protocol

6.3 Log base Recovery

6.4 Shadow Paging

6.5 Differed Updates.

Reference Books:-

1. Database System Concepts- Abraham Silberschatz, Henry F. Korth& S.
Sudarshan,McGraw- Hill, 4th Edition / 5th Edition.
2. R. Elmasri, S.B. Navathe, "Fundamentals of Database Systems", Fifth Edition, Pearson
Education/Addison Wesley, 2007.
3. Database System Concepts – Alexis Leon & Mathews leon, Vikas Publication House
Ltd, New Delhi.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC (UG-CS-503)Software Engineering
Semester-V

Total lectures: 45
Total Marks: 90

Course Objective:

This paper helps to understand

- What is software and the process in development of software.
- It gives detailed knowledge about various models and requirements needed in developing software.
- It also elaborates the concepts of designing, testing & quality about software.

Course Outcomes:

After completion of the course:

- Students are able to perform the E-R Diagram, DFD, Data dictionary, Decision tree about software.
- They can also design the software in learned language using the course content.
- Get the knowledge of types of testing & how testing is performed in industry.

1. Introduction to Software Engineering   **L-8 M-12**

    1.1 Software and Software Engineering

    1.2 Evolution of Software

    1.3 Software Characteristics

    1.4 Software Applications

    1.5 Software Myths

    1.6 Software Process

    1.7 Software Development Life Cycle (SDLC)

2. Software Development Model   **L-8 M-14**

    2.1 Waterfall Model

    2.2 Prototyping Model

    2.3 Incremental Development Model

    2.4 RAD model

    2.5 Spiral Model

3. Requirement Analysis and Specification   **L-8 M-12**

    3.1 Requirements Engineering

    3.2 Fact finding Techniques

    3.3 Introduction to Types of Requirement Modeling

    3.4 Data Modeling Concepts- Data Objects, Data Attributes & Relationship.

4. Design Engineering   **L-7 M-14**

    4.1 Characteristics of good Software Design

    4.2 Design Concepts- Architecture, Modularity, Information Hiding

    4.3 Cohesion & Coupling

    4.4 Decision Table & Decision Tree

    4.5 Data flow Diagram

    4.6 Data Dictionary

5. Software Coding & Testing   **L-7 M-12**

    5.1 Coding standards & Guidelines

5.2 What is testing?

5.3 Testing Activities

5.4 Black box testing

5.5 White box testing

5.6 Introduction to Debugging Approaches – Brute force Method, Backtracking, Case Elimination Method, Programming Slicing

6. Software Quality   L-7 M-12

6.1 What is Quality?

6.2 Software Quality - Garvin's quality dimensions, Mc Calls quality factors, ISO 9125 quality factors

6.3 Elements of Software Quality Assurance

6.4 ISO 9000 & Certification

References –

1. Roger S. Pressman , "Software Engineering a Practitioners Approach", ISBN 13: 9780071267823, 7 th edition, McGraw Hill International Edition.

2. Rajib Mall , "Fundamental of Software Engineering", ISBN- 978-81-203- 3819-7 3 RD Edition, , PHI Learning Private Limited.

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T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC (UG-CS-504): Computer Aided Graphics
Semester-V

Total lectures: 45
Total Marks: 90

Course Objectives

- Understanding Graphics Concept.
- Study the various graphics techniques
- Study the various graphics algorithms

Course Outcome:
- Differentiate between interactive and non-interactive graphics.
- Study line Drawing and Circle Drawing techniques and algorithms.
- Perform 2D and 3D transformation on different images.
- Know about detail working of 2D and 3D clipping and windowing.
- Understand raster graphics and hidden surface elimination.

Unit-1: Introduction to Graphics   **[L:08 M:16]**
1.1 The origin of computer graphics
1.2 Application of Computer Graphics
1.3 Definitions: Pixel, Resolution, Aspect Ratio, Interactive, Non interactive graphics, Active
     graphics, Passive graphics
1.4 How the interactive graphics display works.
1.5 Display types: Random Scan and Raster Scan
Unit-2: Line Drawing Technique   **[L:07 M:14]**
2.1 Co-ordinate Systems
2.2 The Simple DDA
2.3 The Symmetrical DDA
2.4 Bresenham's line drawing Algorithm
2.5 Bresenham's circle drawing Algorithm
Unit-3: Two Dimensional and Three Dimensional Transformations   **[L:08 M:20]**
3.1 Transformation principles
3.2 Concatenations
3.3 2D Transformations, 2D Matrix Representation
3.4 3D Transformations, 3D Matrix Representation
3.5 Transformation in Viewing
3.6 The Perspective Transformation
Unit-4: Clipping and Windowing   **[L:09 M:16]**
4.1 Definitions: Window, View port, Clipping
4.2 Cohen-Sutherland line clipping algorithm
4.3 Mid-point Subdivision line clipping algorithm
4.4 Polygon Clipping
4.5 The Windowing Transformation
4.6 3-D Clipping
Unit-5: Raster Graphics and Solid Area Scan-Conversion   **[L:07 M:12]**
5.1 Introduction
5.2 Scan Converting Line and Polygon drawing
5.3 Coherence
5.4 (YX) Algorithm
5.5 Priority: Painter's Algorithm
Unit-6: Hidden Surface Elimination   **[L:06 M:12]**

6.1 Object Space and Image Space Algorithms
6.2 The Depth Buffer Algorithm
6.3 Warnock's Algorithm

Reference:

1. William M. Newman and Robert F. Sproull, "Principles of Interactive Computer Graphics", ISBN : 9780074632932 (Second Edition), Tata-McGraw Hill Publication
2. Rogers," Procedural Interactive Computer Graphics", ISBN- 978-070486775, McGraw Hill Book Company Ltd.
3. Mathematical Elements of Interactive C.

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DSC SEC(UG-CS-505)Python Programming – I
Semester-V

Total lectures: 45
Total Marks: 90

Course Objectives:
- The course is designed to provide Basic knowledge of Python.
- Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.
- To learn how to design and program Python applications.
- To develop problem solving skills and their implementation through Python.
- Master the fundamentals of writing Python scripts

Course Outcome: At the end of the course, the student will be able to
- Explain basic principles of Python programming language
- Construct and apply various filters for a specific task.
- Apply the best features of mathematics, engineering and natural sciences to program real life problems.

Unit – 1 Introduction to Python Programming   L: 5 M:10
- **Introduction to Python**
- History of Python
- Version of Python
- Need, Featuresof Python
- Applications of Python
- Installing Python on Linux and Windows
- Installing Python IDE

Unit – 2Basics of Python Programming   L:10 M: 20
- Python Identifiers, Variables and Keywords
- Putting Comments
- Expressions and Statements
- Standard Data Types – Basic, None, Boolean, Numbers.
- Type Conversion Function
- Operators in Python
- Operator Precedence
- Accepting Input and Displaying Output

Flow Control Statements
- Conditional Statements
- Looping Statements
- break, continue, pass Statements

Unit – 3Python Strings   **L: 10 M: 20**

- Introduction to String
- String Literals
- Assign String to a Variable
- Multiline Strings
- Operations on Strings, Index Operator: Working with the Characters of a String, String Methods, Length, The Slice Operator, String Comparison,
- **Concepts of Python Lists:** Creating, Initializing and Accessing elements in lists, Traversing, Updating and deleting elements from Lists.
- List Operations: Concatenation, List Indexing, Slices
- Built- in List functions and methods
- Aliasing, Cloning Lists

Unit – 4Python Tuples and Dictionary   **L: 10 M: 20**

Introduction to Tuples

- Creating Tuples.
- Deleting Tuples.
- Accessing elements in a Tuple.
- Tuples Operations: Concatenation, Repetition, Membership, Iteration.
- Built- in Tuples functions and methods

Introduction to Dictionary

- Dictionaries: Concept of key-value pair.
- Creating, Initializing and Accessing elements in a Dictionary.
- Traversing, Updating and Deleting elements in a Dictionary
- Built- in Dictionary functions and methods

Unit – 5Python Functions and ModulesL: 10 M: 20

Introduction to Functions

- Defining a Function (def)
- Calling a Function
- Function Arguments - Required arguments, Keyword arguments, Default arguments, Variable-length arguments
- Scope of Variables
- Void functions and function returning values
- Recursion
- Advance Function Topics: Anonymous Function Lambda, Mapping Functions, Functional Programming Tools: filter and reduce

Introduction to Modules

- Creating Modules and Packages
- Importing Modules
- Using the dir() Function
- Built-in Modules

References:

1. John V Guttag (2013), Introduction to Computation and Programming Using Python, Prentice Hall of India, 2013, ISBN: 9780262525008
2. Peter C. Norton, Alex Samuel and others, ―Beginning Python‖, Wrox Publication,2005 ISBN 10: 0764596543 ISBN 13: 9780764596544
3. R. NageswaraRao(2016), Core Python Programming, Dreamtech Press, 2016, ISBN-13: 9789351199427
4. Wesley J. Chun(2006), Core Python Programming - Second Edition, Prentice Hall, ISBN-13: 978-0132269933, ISBN-10: 0132269937
5. Michael T. Goodrich, Roberto Tamassia, Michael H. Goldwasser(2013), Data Structures and Algorithms in Pyhon", Wiley, 2013, ISBN : 978-1-118-54958-2, ISBN : 978-1-118-29027-9(HardCover)
6. Kenneth A. Lambert(2011), Fundamentals of Python – First Programs, CENGAGE Publication, 2011, ISBN 1111822700, ISBN 9781111822705
7. Luke Sneeringer(2015), Professional Python, Wiley Inc.,2015, ISBN: 1119070856

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T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC (UG-CS-506 A):Elective A - Internet Programming using PHP
Semester-V

Total lectures:45
Total Marks: 90

Objectives:

• To understand Core-PHP concepts, Server Side Scripting Language
  •To acquaint knowledge of Database handling in PHP.

Outcomes:

- To Design dynamic and interactive Web pages.

- PHP framework for effective design of web applications.

Unit–1   The BasicsofPHP   L:12M:24

- Introduction toPHP
- Working of PHP
- Structure ofPHP
    - Structure & Syntax of PHP
    - PHP withHTML
    - Comments
    - Data Types andVariables
    - Operators
- Flow ControlStatements
    - ConditionalStatements
    - Looping Statements
    - Exit, Return, Die, Include and RequireStatements

Unit – 2 Arrays, FunctionandString   L:10 M:20

- Introduction toArray
    - Types ofArray: Index, Associative, MultidimensionalArray
    - Different array function inPHP
    - Traversing arrays, Sorting arrays
- Introduction toFunction
    - Defining and Calling afunction
    - Scope of variables infunction
    - Function Parameters
    - Returning Values from afunction

- RecursiveFunctions
- String functions inPHP
  - Printing functions
  - Comparing strings
  - Manipulating and Searchingstrings
- RegularExpressions

Unit – 3 Object-OrientedPHP   L:10 M:18

- Introduction and Benefits ofOOPs in PHP
- Creating aClass in PHP
- Creating anObject in PHP
  - Adding aMethods
  - Adding aProperties
  - Visibility (Public, Private andProtected)
- Constructor andDestructors
- Inheritance (Extending aclass)
- Abstract classes, Finalclasses
- Interfaces
- Exception handling
- Serialization

Unit – 4 WebTechniques   L:07 M:14

- Introduction
- HTTPBasics
- ProcessingForms
  - Methods (Get and PostMethod)
  - Parameters ($_GET and$_POST)
  - Self-ProcessingPages
  - FileUploads
- Maintaining State
  - Cookies
  - Sessions
  - Combining Cookies andSessions

Unit – 5 PHPwithMySQL   L:06 M:14

- Introduction toMySQL
- Interaction between PHP and MySQL
- Error Checking
- Execute DDLStatements
- Execute DMLStatements

References Books:
1. Ivan Bayross and Sharnam Shah , "PHP 5.1 for Beginners", ISBN: 9788184040753 SPD Publication 2007
2. Dave W. Mercer, Allan Kent, "Beginning PHP 5" ,ISBN: 978-0-7645-5783-5,Wrox publication , July2004.
3. W. Jason Gilmore , "Beginning PHP and MySQL",ISBN: 978-1-4302-3115-8, 3rd edition, Apress Publication.

4. RasmusLerdorfandKevin Tatroe, "ProgrammingPHP"   ,ISBN: 978-1-56592-610-3, O'Reillypublication,2002.

5. Mastering PHP , BPB Publication.

6. PHP cookbook, O'Reilly publication.

Websites:

7. http://www.php.net.in/

8.http://www.w3schools.com

9.http://www.tutorialpoints.com

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T. Y. B. Sc. (Computer Science)
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Elective B
DSC (UG-CS-506B): JAVA Programming I
Semester-V

Total lectures: 45
Total Marks: 90

Course Objectives:
- To learn Object Oriented Design with JAVA
- Ability to write computer program to solve specific program
- To handle abnormal termination of a program using exception handling

Course Outcomes:

- Get knowledge of JDK environment
- Explore polymorphism using method overloading and method overriding
- Understand the different aspects of hierarchy of classes and their extensibility
- Understands the concept of streams and files
- Write programs for handling run time errors using exceptions

Unit-1 Introduction toJAVA   **[L-04M-08]**

  1.1 History ofJava

  1.2 Comparison of Java and C++

  1.3 Features - Simple, Object Oriented Distributed, Robust, Secure, Architecture neutral,   Portable, Interpreted, High Performance, Multithreading,dynamic.

  1.4 Java andInternet

  1.5 JDK Environment (Java, Javac, Applet Viewer,Javadoc)

Unit-2 Basics of JAVA   **[L-04M-10]**

  2.1 Variables, Data Types, Casting, Operators

  2.2 Compiling and running java program,

  2.3 Command linearguments.

  2.4 Accepting input from console (Using BufferedReaderclass,Scanner)

  2.5Arrays

]Unit-3 Objects andClasses   **[L-08M-14]**

  3.1 Introduction – Classes andObjects

  3.2 Data members,methods

  3.3 Types of Constructors

  3.4 Overloading

  3.5 Packages

  3.6 Accessmodifier

  3.7 Innerclasses

Unit-4 FunctionsinJAVA   **[L-07M-16]**

  4.1 String functions - Concatenation, Substring, String editing, Testing forEquality,

  4.2 Character extraction functions – CharAt, getChars, getByte

  4.3 Formattingfunctions

4.4 Date and Time functions using Gregorian CalendarClass.

Unit-5 Inheritance [L-10 M-20]

5.1 Inheritance- Inheritance Hierarchy, Super class, Overriding,Polymorphism
5.2 Use of final keyword related to method and class
5.3 Interfaces
5.4 Wrapperclasses
5.5 Reflection - 'Class'class
5.6 Use of abstract class and abstract methods

Unit-6 Exception Handling [L-06 M-10]

6.1 Dealing with errors - Types ofexceptions
6.2 Exception Handling Mechanism
6.3 Catching Exceptions.
6.4 Creating user defined exception

Unit-7 Streamsa n d Files [L-06M-12]

7.1 String class and StringBuffer Class
7.2 Using the File class
7.3 Stream classes-Byte Stream classes , Character Stream Classes
7.4 Creation of files
7.5 Reading/Writing characters and bytes
7.6 Handling primitive data types
7.7 Random Access files

References:

1. Cay's Horstmann and Gary Cornell, " Core Java Volume -1 Fundamentals", ISBN: 81-7808-277-2
2. E. Balaguruswamy ,"Programming with Java – A primer", ISBN: 978-0-07-061713-1
3. Herbert Schildt, "The complete reference JAVA-2", ISBN:978-0-07-049543-2, Fifth Edition, (TMH)
4. Java 6 Programming Black Book

Kavayitri Bahinabai Chaudhari
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T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC UG-CS-507 LAB on Python Programming – I

Instruction:

- **At the time of Practical you can used any Python IDEs and Code Editors (PyCharm, Spyder, Thonny, etc.).**

1. Installing python and setting up environment. Simple statements like printing the names ("Hello World"), numbers, mathematical calculations, etc.
2. Write a program to find all prime numbers within a given range.
3. Write a program to print "n" terms of Fibonacci Series using Iteration
4. Write a program to demonstrate the use of slicing in string.
5. Programs related to string manipulation
6. Write a Programs related to functions & modules
7. Write a program that demonstrate concept of functional programming.
8. Write a program to demonstrate the use of list & related functions
9. Write a program to demonstrate the use of Dictionary& related functions
10. Write a program to demonstrate the use of tuple.

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DSC UG-CS-508: LAB on Computer Aided Graphics
Semester-V

Course Objectives
- To know how to implement Graphics Programs.
- To implement various graphics techniques
- To implement various graphics algorithms

Course Outcome:
- Understanding Graphics Concept Practically
- Hands on of using standard graphics library
- Hands on of implementation of DDA, Bresenham's Line,Circle Drawing Algorithm
- Hands on of implementation of 2D Transformation: Translation, Scaling and Rotation
- Hands on of implementation ofCohen-Sutherland line clipping algorithm

1. Draw the following pattern using standard graphics library:
   a. Block Diagram of Computer
   b. Display Flag of India
   c. Flow Chart Symbols, DFD Symbols, ER-Diagram Symbols
2. Implement Bresenham's Line Drawing Algorithm
3. Implement Bresenham's Circle Drawing Algorithm
4. Implement DDA line Drawing Algorithm
5. Implementing Translation transformation on polygon
6. Implementing Scaling transformation on polygons
7. Implementing Rotation transformation on polygons
8. Implement Cohen-Sutherland line clipping algorit

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Elective A
DSC (UG-CS-509 A): Internet programming using PHP
Semester-V

1. Design web pages using HTML that will contain online admissionforms.
2. Write PHP scripts that demonstrate fundamentalsPHP.
3. Write PHP script that will display grade based on criteria given below using the marks obtained in T.Y.Bsc.Examination.
   a. Distinction (70 andabove)
   b. First Class (60 -69)
   c. Pass (40 - 59)
   d. Fail (below 40)
4. Write a PHP script to demonstrate different Stringfunctions.
5. Write a PHP script to demonstratearray.
6. Write a PHP script to use Functions (Call by Value, Call byreference).
7. Write a PHP script to Demonstrate OOPS Concept inPHP.
8. Write a PHP script to demonstrate ExceptionHandling.
9. Write a PHP script to demonstrate Form Data Handling using Get andPost methods.
10. Design a database in MYSQL using PHP. Create table in database. Store, Update, Delete and Retrieve data from the table. Display the data from the table.
11. Write a PHP script to store, retrieve and delete cookies on your localmachine.
12. Write a PHP script to store, retrieve and delete data using sessionvariables.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
Elective B
DSC (UG-CS-509B): Lab on JAVA Programming I
Semester-V

Course Objectives:
- To learn Object Oriented Design with JAVA
- Ability to write computer program to solve specific program
- To handle abnormal termination of a program using exception handling

Course Outcomes:

- Get knowledge of JDK environment
- Explore polymorphism using method overloading and method overriding
- Understand the different aspects of hierarchy of classes and their extensibility
- Understands the concept of streams and files
- Write programs for handling run time errors using exceptions

1. Write a simple program in Java to print first fifty primenumber.

2. Write a program in Java to print factorial of given number using recursion

3. Write a program in Java to print Fibonacci seriesin given series

4. Write a program in Java to demonstrate command line arguments.

5. Write a program in Java to create student information using array

6. Write a program in Java to implement user defined package.

7. Write a program in Java to implement default & parameterized constructor.

8. Write a program in Java to demonstrate various operations on string functions.

9. Write a program in Java to demonstrate wrapper classes

10. Write a program in Java to demonstrate class.

11. Write a program in Java to implement inheritance.

12. Write a program inJava to demonstrate inner class.

13. Write a program in Java to demonstrate reflection.

14. WriteaprograminJavatodemonstrateexceptionhandling.

15. Write a program in Java to demonstrate text stream object that take input from user
    & write it into text file.

Semester –VI

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC (UG-CS-601):Operating System
Semester-VI

Total lectures: 45
Total Marks: 90

Objectives:
- To understand Operating system concepts and services.
- To understand the concept of a CPU scheduling, memory management, Disk Drum Scheduling and deadlock.

Outcomes:
- Students should familiar with Operating System Services.
- Understand CPU scheduling algorithms, memory Management Techniques, Disk Drum Scheduling algorithms, Deadlock preventions and avoidance.
- Introduction to android operating systems – its architecture, applications and uses.

Unit 1.Introduction L:04M:08
1.1 What is an operating system?
1.2 Types of Operating System
1.3 Services of Operating System
1.4 Functions of operating system.
Unit 2.CPU scheduling L:10M:16
2.1 Multiprogramming Concepts
2.2 Basic Concept of CPU scheduling: CPU-I/O burst cycle, CPU scheduler, Preemptive scheduling, Dispatcher
2.3Performance criteria's
2.3 Scheduling Algorithms:FCFS, SJF, Priority scheduling, Round-robin scheduling
2.4 Multilevel queues, multilevel feedback queue
Unit 3.Memory Management L: 10M: 20
3.1 Logical versus Physical Address space
3.2 Swapping
3.3 Multiple partition allocation MFT , MVT
3.4 Paging
3.5 Segmentation
3.6Virtual Memory Management – Background, Demand paging
Unit 4. Disk and Drum Scheduling L:06M:18
4.1 First Come first serve scheduling
4.2 Shortest Seek Time First Scheduling
4.3 SCAN Scheduling
4.4 C-SCAN Scheduling
Unit 5 Deadlocks L:10M:18
5.1 Concept of Deadlock
5.2 Deadlock Characterization
5.3 Deadlock Prevention
5.4 Deadlock Avoidance
5.5 Deadlock Detection
5.6 Recovery from Deadlock
Unit 6 Overview of Android Operating system L:05 M:10
6.1 What is android operating system.

Reference books:

1. Peterson Silberschatz, "Operating system concepts", ISBN: 0-201-35251-6, Addison Wesley, 1ST Edition

2. Andrew S. Tanenbaum, "Modem operating system", ISBN: 81-203-0974-X, P .H.I. New Delhi 3.

3. Achyut S. Godbole, "Operating Systems" ISBN: 9780070702035, McGraw Hill Education, 2010, Third Edition

4. .Marko Garaenta, "Learning Android ,Oreilly ", ISBN: 978-1449319236, O′ Reilly, second edition

 5 Mike Wolfson, "Android developers tools ,Essential,Oreilly" ISBN:978-1

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC (UG-CS-602):Relational Database Management Systems
Semester-VI

Total lectures: 45
Total Marks: 90

Prerequisites

- Basic Knowledge of DBMS
- Knowledge of SQL Queries
- Basics of relational design
- Basics of ER model

Course Objectives

- To teach fundamental concepts of RDBMS (PL/PgSQL)
- To teach database management operations
- Be familiar with the basic issues of transaction processing and concurrency control
- To teach data security and its importance

Course Outcomes

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

- Design E-R Model for given requirements and convert the same into database tables.
- Use database techniques such as SQL & PL/SQL.
- Explain transaction Management in relational database System.
- Use advanced database Programming concepts

Unit 1 INTRODUCTION TO RDBMS [L : 5 M: 10]
- Introduction to RDBMS,
- Introduction to Open Source software PostgreSQL,
- Installation of open source software PostgreSQL on Windows and Linux,
- Data types of PostgreSQL

Unit 2 DATABASE AND TABLE OPERATIONS [L : 05 M: 10]
- Database Operations - 1.Creating a Database 2.Dropping the Database
- Table Operations – 1. Create 2. Alter3. Drop

Unit 3 SQL – STATEMENTS, OPERATORS, FUNCTIONS [L : 10 M: 20]
- Statements - SELECT, INSERT, UPDATE, DELETE
- Null value and Default value
- Operators - Arithmetic, Logical, Comparison, Bitwise, Relational
- Functions - Aggregate functions, Date and Time functions, String functions

- Clauses:- where, order by, AND, OR, Between, Like, CASE, Distinct, Group by, Having

Unit 4 VIEW, JOIN and DATA CONSTRANTS in SQL [L : 10 M: 20]
- **Constraints -** Data Integrity, Entity Integrity
- Keys - PRIMARY KEY, UNIQUE, FOREIGN KEY, CHECK, Not Null
- **Views -** Create, Alter, Drop
- **Join -** Joins, Cross Join, Inner Join, Outer Join, Self-Join
- **Subquries** -Subqueries as Constants, Subqueries as Correlated Values, Subqueries as Lists of Values, NOT IN and Subqueries with NULL Values, Subqueries Returning Multiple Columns
- **Statement -** MERGE Statement
- **Set operations**-UNION, EXCEPT, and INTERSECT
- **Clauses** -ANY, ALL, and EXISTS Clauses

Unit 5 TRANSACTION COMMANDS , INDEX AND SEQUENCE[L : 5 M: 10]
- **Transaction commands-**Commit, Rollback
- **Indexing -**Creating an Index, Unique Indexes
- **Sequences**- Creating Sequence, using nextval(), currval() and setval()

Unit 6PL/PGSQL - SQL PROCEDURAL LANGUAGE[L : 15 M: 20]
- **Introduction to** PL/PGSQL-Advantages of PL/PGSQL, structure of PL/PGSQL, basic Statements and control structures
- **Function -**Creating functions, Removing functions
- **Cursors-**Creation of Cursors, Using Cursors, Looping
  Triggers-Introduction, Triggers Vs constraints, DML Triggers, DDL Triggers
- **Error handling** -Introduction Error Handling, RAISE Statement

REFERENCE BOOKS:
- Bruce Momjian , PostgreSQL Introduction and Concepts, Addison.Wesley, ISBN 0-201-70331-9
- NEIL MATTHEW AND RICHARD STONES **, Beginning Databases with PostgreSQL, From Novice to Professional, Second Edition,** ISBN (pbk): 1-59059-478-9

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC (UG-CS-603):Computer Network
Semester-VI

Total lectures: 45
Total Marks: 90

Course Objective:
This paper helps to understand
- How network works? & types of networks & its applications.
- It helps to understand the various models.
- It helps to understand various layers & their functionality.
- It get the idea of how cryptography works.

Course Outcomes:
After completion of the course:
- Students understand the information exchange done across the network with the help of OSI & TCP/IP models.
- Student understands how errors are captured & handled in network.
- Student understands various attack & its prevention techniques.

Unit-1 Introduction to Computer Network and Network Model   **L-8 M- 12**
1.1 What is Computer Network?
1.2 Application of Computer Networks
1.3 Transmission Mode, Network Structure
1.4 Network Topologies
 1.5 ISO OSI Reference Models, TCP / IP Reference Model & their Comparison.

Unit-2 Physical Layer   **L-8 M- 15**
 2.1 Guided Media:
        2.1.1 Twisted Pair
        2.1.2 Coaxial Cable
        2.1.3 Fiber Optics
        2.14 Satellite Communication
        2.15 Microwave Communication
        2.1.6 Submarine Cables.
2.2 Unguided Media
        .2.1. Electromagnetic Spectrum
         2.2.2. Radio Transmission
        .2.3. Microwave Transmission
        2.2.4. Infrared & Millimeter Waves
        2.2.5. Light wave Transmission

Unit 3 The Data link Layer   **L-8 M- 15**
3.1 Services Provided to Network Layer
3.2 Framing, Error Control , Flow Control
3.3 Error Detection – Redundancy, Parity Check, Checksum & CRC

3.4 Error Correction – Hamming Code.

Unit 4 The Network Layer   L-7 M- 18
4.1 Logical Addressing
         4.1.1 IP v4 Addresses - Address Space - Classful Addressing - Classless Addressing
 4.2. Routing Algorithm
         4.2.1. Shortest Path
         4.2.2. Multicast Routing
4.3. Congestion Control
         4.3.1. Introduction to Congestion Control
4.3.2. Deadlocks

Unit-5 Transport Layer   L-7 M- 15
5.1 Process to Process Delivery
         5.1.1 Client-Server Paradigm
         5.1.2 Multiplexing and Demultiplexing
         5.1.3 Connectionless v/s Connection Oriented Services
         5.1.4 Reliable v/s Unreliable Transmission
5.2 UDP and TCP
         5.2.1 UDP – Operations and uses
         5.2.2 TCP – Services and features

Unit-6 Cryptography and Public key Infrastructure   L-7 M-15
6.1 Introduction:
         6.1.1 Cryptography, Cryptanalysis, Cryptology, Substitution
         6.1.2 Techniques: Caesar's cipher, Monoalphabetic and Polyalphabetic,
         6.1.3 Transposition techniques – Rail fence technique, Simple Columnar
6.2 Public key infrastructures:
         6.2.1 basics, digital certificates, certificate authorities, registration authorities,
Digital Signature.

Reference Books: -
1. Andrew S.Tanenbaum , "Computer Networks " ISBN: 978-0130661029, Prentice Hall, Fourth Edition .
2. Behrouz A. Forouzan , "Data Communication & Networking", ISBN: 978- 0071232418 , McGraw Hill Higher Education , Third Edition 3.
3. U.D. Black , "Data Communication & Distributed Networks", ISBN: 9780835913416, Published by
   Prentice-Hall, Englewood Cliffs, N.J., 1987 , Second Edition ,
4. AtulKahate , " Cryptography and Network Security " Edition 3, McGraw Hill.

KBC North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June 2020)
Theoretical Computer Science (UG-CS-604)
Semester-VI

Total lectures: 45
Total Marks: 90

Course Outcome
1) Understanding the use of Sets, Relations and Graphs.
2) Understand Languages in TCS.
3) Introduction of Regular Languages and Expressions.
4) Understanding Pumping Lemma and its applications.
5) Explore the knowledge of Pushdown Automata.
6) Understanding Normal Forms with Examples.
7) Understanding Turing Machine.

Unit-1. Mathematical Preliminaries [L-04 M-12]
1.1 Symbol, Alphabet, String, Formal Language, Operation on languages
1.2 Sets, Relations
      1.2.1 Sets and Subsets
      1.2.2 Relations
      1.2.3 Closure of Relations
1.3 Graphs & Trees
      1.3.1 Graphs
      1.3.2 Trees
1.4 Principal of Induction
      1.4.1 Method of Proof by Induction

Unit-2. Finite Automata [L-14 M-20]
2.1 Definition of Automata
2.2 Why study Automata Theory?
      2.2.1 Introduction to finite Automata
      2.2.2 Structural representations
      2.2.3 Automata and Complexity
2.3 Descriptions of Finite Automata, Transition Systems, Transition Functions
2.4 Deterministic Finite Automata (DFA)
2.5 Nondeterministic Finite Automata (NFA)
2.6 The Equivalence of DFA and NFA
2.7 Minimization of DFA
2.8 Finite Automata with ε-Moves
2.9 Melay and Moore Machines: Definition and Examples
2.10 Applications of Finite Automata

Unit-3. Regular Expressions & Regular Sets [L-08 M-16]
3.1 Regular Expressions
3.2 FA & Regular Expressions
      3.2.1 Convert Regular Expression to FA
      3.2.2 Construct FA from Regular Expression
      3.3 Pumping Lemma for Regular Sets and applications

Unit-4. Context Free Grammars   **[L-10 M-18]**
4.1 Introduction to Context Free Grammars
4.2 Derivation Trees
4.2.1 Ambiguity in CFG
4.3 Simplification of Context Free Grammars
       4.3.1 Useless Symbols
       4.3.2 Null Production
       4.3.3 Unit Production
4.4 Normal forms for CFG
       4.4.1 Chomsky Normal Form (CNF)
       4.4.2 Greibach Normal Form (GNF)

Unit-5 Pushdown Automata   **[L-04 M-12]**
5.1 Basic Definitions
5.2 Types of PDA
5.3 Acceptance by Pushdown Automata
5.4 PDA and Context Free Language

Unit-6 Turing Machine   **[L-05 M-12]**
6.1 Introduction
6.2 Turing Machine Model
6.3 Representation of Turing Machine
6.4 Design of Turing Machine

References:
1. John E. Hopcraft,RajeevMotwani, Jeffery D. Ullman, "Introduction to Automata Theory, Languages & Computations", ISBN: 978-0321455369 , Pearson publication, Third edition
2. K. L. P. Mishra, N. Chandrasekaran, "Theory of Computer Science", ISBN: 9788120329683, Published by Prentice-Hall of India Pvt.Ltd , Third edition.
3. Daniel A. Cohen, "Introduction to Computer Theory",ISBN: 978-0471137726, John Wiley & Sons; 2nd Revised edition edition.
4. SmitaRajpal, "Theory of Automata and Formal Languages", GalgotiaPublications,ISBN: 1234027054
 5. http://nptel.ac.in/

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North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June -2020)
DSC (UG-CS-605) Python Programming – II
Semester-VI

Total lectures: 45
Total Marks: 90

Course Objectives:

- The course is designed to provide advance knowledge of Python.
- Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.
- To learn how to design and program Python applications.
- To develop problem solving skills and their implementation through Python.
- Master the fundamentals of writing Python scripts
- To develop the ability to write database applications in Python

Course Outcome: At the end of the course, the student will be able to

- Explain basic principles of Python programming language
- Implement object oriented concepts, database applications.
- Construct regular expressions for pattern matching and apply them to various filters for a specific task.
- Design and implement Database Application and Content providers.
- Apply the best features of mathematics, engineering and natural sciences to program real life problems.

Unit – 1Object Oriented Concepts in Python   **L:05 M: 10**

- Overview of OOP Terminology
- Creating Classes
- Creating Instance Objects
- Accessing Attributes
- Built-In Class Attributes
- Garbage Collection: Constructor
- Overloading Methods and Operator
- Inheritance - Implementing a subclass, Overriding Methods

Unit – 2Python Exception Handling and Regular Expression   **L: 10 M: 20**

- Introduction
- Syntax Error
- Handling Exception
- Multiple Except Clauses
- try…finally
- Raising Exception
- User Defined Exception

- List of Standard Exception
- Regular Expression

Unit – 3 File Handling in Python   L: 10 M: 20

- File Objects,
- Writing Text Files,
- Appending Text to a File,
- Reading Text Files,
- File Exceptions,
- Paths and Directories,
- Exceptions in os, Paths,
- Directory Contents,
- Obtaining Information about Files, Renaming, Moving, Copying, and Removing Files,
- Creating and Removing Directories, Globbing

Unit – 4 GUI with Python   L: 10 M: 20

- GUI Programming Toolkits for Python,
- Tkinter Introduction,
- Creating GUI Widgets with Tkinter,
- Resizing the Widget,
- Configuring Widget Options,
- Putting the Widgets to Work,
- Creating Layouts, Packing Order,
- Controlling Widget Appearances, Radio Buttons and Checkboxes, Dialog Boxes, Other Widget Types

Unit – 5 Python with MySQL   L: 10 M: 20

- Introduction to MySQL
- Installing MySQL Driver - MySQL Connector or MySQLdb
- MySQL Database connection with Python
- Creating Database in MySQL using Python
- Create a Table in MySQL with Python
- Insert, Select, Update and Delete Operation in MySQL with Python
- COMMIT Operation
- ROLLBACK Operation
- Disconnecting Database

References:

1. John V Guttag (2013), Introduction to Computation and Programming Using Python, Prentice Hall of India, 2013, ISBN: 9780262525008
2. Peter C. Norton, Alex Samuel and others, ‒Beginning Python‖, Wrox Publication,2005 ISBN 10: 0764596543 ISBN 13: 9780764596544
3. R. NageswaraRao(2016), Core Python Programming, Dreamtech Press, 2016, ISBN-13: 9789351199427
4. Wesley J. Chun(2006), Core Python Programming - Second Edition, Prentice Hall, ISBN-13: 978-0132269933, ISBN-10: 0132269937
5. Michael T. Goodrich, Roberto Tamassia, Michael H. Goldwasser(2013), Data Structures and Algorithms in Pyhon", Wiley, 2013, ISBN : 978-1-118-54958-2, ISBN : 978-1-118-29027-9(HardCover)
6. Kenneth A. Lambert(2011), Fundamentals of Python – First Programs, CENGAGE Publication, 2011, ISBN 1111822700, ISBN 9781111822705
7. Luke Sneeringer(2015), Professional Python, Wiley Inc.,2015, ISBN: 1119070856

Kavayitri Bahinabai Chaudhari

North Maharashtra University, Jalgaon

T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC (UG-CS-606 A):
Elective A - Web Programming using ASP.NET
Semester-VI

Total lectures:45
Total Marks: 90

Objectives:

- To describe the .Net Framework, its components and features. ·
- To introduce the ASP.NET. ·
- To demonstrate the use of various controls to design a web application. ·
- To demonstrate the use of ADO.NET.

Outcomes:

- Upon completion of this course the students should be able to understand the .NET framework ·
- Develop a proficiency in the ASP.NET ·
- Develop ASP.NET web applications on any given scenario.

Unit1.Introduction   **L-08, 20Marks**

- Introduction toAsp.Net
- Structure of Asp.NetPage
- ASP.Net CompilationModel
- Code BehindModel
- Execution Stages and Event Model for the PageClass

Unit 2.ASP.NETControls   **L-08, 20Marks**
- Introducing WebForms
- HTMLControls
- WebControls
- BasicControls
- UserControls
- ASP.Net RichControls
- Validation Controls
- ASP.Net Page Directives

Unit 3. ASP.NetIntrinsicObjects   **L-15, 20Marks**
- HTTP RequestObject, HTTP ResponseObject

- HTTP Server UtilityObject
- HTTP Application StateObject
- HTTP Session stateObject
- Object Contextobject

Unit 4. Data AccesswithADO.Net   **L-14, 30Marks**
- ASP.Net Data ListControls
- Working With ADO.Net
- Using BasicSQL
- Working With ASP.NetObject
- Data ReaderObject
- Data TableObject
- Data RowObject
- Data Column Object
- Data RelationObject.

Books References: -

1. Kogent Learning Solutions, ".NET 4.0 Programming 6 in 1 Black BooK", ISBN: 9789350045107, by DreamtechPress,2013.
2. Crouch, Matt J, "Asp.Net and Vb.Net Web Programming"ISBN: 9780201734409, Addison-Wesley,2002.
3. J.Liberty,D.Hurwitz , Programming ASP.Net, ISBN: 978-0596529567, O'Reilly Media ,4^{TH}Edition.

WEB References:-1. http://www.tutorialspoint.com

Kavayitri Bahinabai Chaudhari

North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
Elective B
DSC (UG-CS-606B): JAVA Programming II
Semester-VI

Total lectures: 45
Total Marks: 90

Course Objectives:
- **To design User Interface using Swing and AWT**
- **Learn the advanced concept of java**
- **To aware about the applet programming**

Course Outcomes:
- Program using graphical user interface with Swing classes
- Handle different kinds of events generated while handling GUI components
- Create programs using menus and dialog boxes
- Program to create applets
- Understand advanced java concepts like JDBC, Java Beans

Unit-1GRAPHICSProgramming   **[L-08 M-14]**

1.1 Introduction- frames, framelayouts
1.2 Displaying information in a frame, Graphics objects and paint componentmethod
1.3 Text andFonts, Colors
1.4 Drawing Shapes, FillingShapes
1.5 Paint mode andImages.

Unit-2 EventHandling   **[L-10M-18]**

2.1 EventHandling Mechanism
2.2 Concept: AWT, Swing, Difference between AWT and Swing.
2.2 The AWT eventhierarchy
2.3 Event handling summary- event sources and listener, adapterclasses.
2.4 Low level events - Focus, window, keyboard, mouseevents.
2.5 Multicasting

Unit-3 User Interface ComponentsUsingSWING   **[L-10M-18]**

3.1 Introduction to layout management - Panels, Border Layout, GridLayout,
3.2 Text Input- Text Field, Text Area, Passwordfield
3.3 Labels andButtons
3.4 Making choices - Check boxes, Radio buttons, List, Comboboxes

Unit-4 Menu andDialogBox   **[L-08M-14]**

4.1 Menus - Buildingmenus
4.2 Menuevents,
4.3 Popupmenu,
4.5 Keyboard mnemonics and Accelerators, enabling and disablingmenus
4.6 Dialog boxes - opening dialogs using inbuilt dialogbox

Unit-5APPLETS   **[L-05 M-13]**

5.1 Introduction to applet
5.2 Converting application to applets
5.3 Life cycle ofapplet
5.4 Applet tag, Param Tag

Unit-6 Introduction ToAdvancedJAVA   **[L-04 M-13]**

        6.1 Collections

6.2 Interfaces- List,Set

6.3 Classes- Array List,Vector

        6.4 Database connectivity -JDBC

        6.5 Introduction to JavaBeans- Servlets, Java Server Pages(JSP)

References:

1. Cay's Horstmann and Gary Cornell ,"CoreJavaVolume 2", ISBN: 978-0-13- 708160-8, 9TH edition, published by PrenticeHall
2. E. Balaguruswamy ,"Programming with Java – A primer", ISBN:978-0-07-061713-1
3. Herbert Schildt, "The complete reference JAVA-2", ISBN: 978-0-07-049543-2, Fifth Edition,(TMH)
4. Java Programming BlackBook.
5. Buyya, Selvi, Chu, , "Object Oriented Programming with Java", ISBN: 978- 0070678835, Tata McGraw Hill Education2010

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC UG-CS-LAB-607 LAB on Python Programming – II
Semester-VI

Instruction:

- **At the time of Practical you can used any Python IDEs and Code Editors (PyCharm, Spyder, Thonny, etc.).**

1. Write a program to demonstrate Exception Handling mechanism

2. Write a program to demonstrate Regular expression in python.

3. Write a program to demonstrate the working of classes and objects.

4. Write a program to demonstrate the working of Inheritance and Overloading Methods and Operator.

5. Write a program to demonstrate read & write file.

6. Write a program to demonstrate to Renaming, Moving, Copying, and Removing Files,

7. Write a program to demonstrate to learn GUI programming using Tkinter.

8. Write a program to create a database application for insert, update and delete in a table using MySQL.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
DSC (UG-CS-Lab 608): Lab on RDBMS
Semester-VI

Course Objectives
- To perform operations on relational database management systems.
- Understand basic database management operations.
- Design E-R Model for given requirements and convert the same into database tables.

Course Outcomes:-

On completion of this course, students will be able to :
- To use SQL & PL/SQL.
- To perform advanced database operations.
- Create database tables in postgreSQL.
- Write and execute simple, nested queries

Use of PostgreSQL 11

1. To create one or more tables with following constraints, in addition to the first twoconstraints (PK & FK)
   a. Check constraint
   b. Unique constraint
   c. Not null constraint
2. To drop a table, alter schema of a table, insert / update / delete records using tablescreated in previous Assignments. (use simple forms of insert / update / deletestatements)
3. To query the tables using simple form of select statement Select <field-list> from table [where <condition> order by <field list>] Select <field-list, aggregate functions > from table [where <condition> group by <> having <> order by <>]
4. To query table, using set operations (union, intersect)
5. To query tables using nested queries (use of 'Except', exists, not exists, all clauses
6. To create views
7. To create Stored Procedure
   - A Simple Stored Procedure
   - A Stored Procedure with IN, OUT and IN/OUT parameter
8. Stored Function
   - A Simple Stored Function
   - A Stored Function that returns
   - A Stored Function recursive
9. Cursors
   - A Simple Cursor
   - A Parameterize Cursor

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
Elective A
DSC (UG-CS-609 A): Lab on Lab on ASP.NET
Semester-VI

Course Objectives:

Course Outcomes:

1. Write an ASP .net program that demonstrate use of HTMLControls

2. Write an ASP .net program that demonstrate use of webcontrols.

3. Write an ASP .net that return the windows name of your computer and URL of the page that you arevisiting.

4. Write an ASP .net program that demonstrate use of Validation Controls.

5. Write an ASP .net program that demonstrate use of IntrinsicObjects.

6. Write an ASP .net program that demonstrate Application and Session Scope Variables using Global. Ajax

7. Write an ASP .net program that demonstrate Pagedirectives.

8. Write an ASP .net page that used the connection object to connect the database and display information using data gridControls.

Kavayitri Bahinabai Chaudhari

North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
(w.e.f. June-2020)
Elective B
DSC (UG-CS-509 B): Lab on JAVA Programming II
Semester-VI

Course Objectives:
- **To design User Interface using Swing and AWT**
- **Learn the advanced concept of java**
- **To aware about the applet programming**

Course Outcomes:
- Program using graphical user interface with Swing classes
- Handle different kinds of events generated while handling GUI components
- Create programs using menus and dialog boxes
- Program to create applets
- Understand advanced java concepts like JDBC, Java Beans

1. Write a program in Java to display messages in various fonts in aframe

2. Write a program in Java to draw various geometric shapes like circle, line, rectangleetc.

3. Write a program in Java to demonstrate paintmode.

4. Write a program in Java to demonstrate windowevents.

5. Write a program in Java to demonstrate Mouseevents.

6. Write a program in Java to demonstrate Keyboard events.(key pressed, key released)

7. Write a program in Java to demonstratemulticasting

8. Write a program in Java to demonstrate user interface component list boxes and combo box.

9. Write a program in Java to demonstrate user interface component radio button and check box.

10. Write a program in Java to demonstrate menus as interfacecomponent.

11. Write an Applet to display humanface.

12. Write a program in Java to demonstrate Java Applet with parameter

13. Write a program in java to demonstrate collection interfaces. (List andSet).