JAI HIND COLLEGE AUTONOMOUS

Syllabus for TYBSc

Course : Mathematics
(Applied Component)

Semester : VI

Credit Based Semester & Grading System

With effect from Academic Year 2018-19

List of Courses

Course: Computer Programming   **Semester: II**
         (Applied Component)

SR. NO.	COURSE CODE	COURSE TITLE	NO. OF LECTURES / WEEK	NO. OF CREDITS
TYBSc				
1	CFC201	Computer Programming and System Analysis -II	03	02

Course code	Title	Credits
SMAT 6 AC	**Computer Programming and System Analysis -II**	**2.5**
Unit I	**Object Oriented Systems**	20 L

(a) **System:** Information system, Purpose of system analysis and design, System Development Life Cycle.

(b) **Programming approach:** Procedural and Object-Oriented approach.

(c) **Object-Orientation:** Features of object-orientations: Abstraction, Inheritance, Encapsulation and Polymorphism. Introduction to Object-Oriented Analysis and Design.

(d) **System Analysis:** Overview of Unified Modeling Language (UML), Fact finding using User involvement: Actors, Use cases and Use case diagram.

(e) **Class diagram:** Classes and Objects, Attributes and methods, Links and association: Links between objects, associations between classes, Ternary and reflexive associations, Role Names, aggregation, Generalization and inheritance.

Unit II	**Introduction to Java Programming**	20 L

(a) **Introduction:** History of Java, Java features, different types of Java programs, Differentiate Java with C. Java Virtual Machine.

(b) **Java Basics:** Variables and data types, declaring variables, literals: numeric, Boolean, character and string literals, keywords, type conversion and casting. Standard default values. Java Operators: Arithmetic, relational, logical, assignment, increment and decrement, conditional, statement and expressions, Loops and Controls: Control statements for decision making: select statements (if statement, if …else… statement, if … else … if …statement, switch statement), goto statement, looping (while loop, do … while loop and for loop), nested loops, breaking out of loops (break and continue statements), labeled loops. (No Questions are to be asked on this topic).

(c) **Arrays:** one and two -dimensional array, declaring array variables, creating array objects, accessing array elements.

(d) **Classes:** Defining a class, creating instance and class members: creating object of a class; accessing instance variables of a class; creating method; naming method of a class; accessing method of a class; overloading method; 'this' keyword, constructor and Finalizer: Basic Constructor; parameterized constructor; calling another constructor; finalize() method; overloading constructor.

(e) **Visibility control:** public access, friendly access, protected access, private access, private protected access.

Unit III	**Inheritance, Exception Handling**	20 L

(a) **Inheritance:** Various types of inheritance, super and subclasses, keywords-

'extends'; 'super', overriding method, final and abstract class: final variables and methods; final classes, abstract methods and classes. Concept of interface.

  (b) Exception Handling and Packages: Need for Exception Handling, Exception Handling techniques: try and catch; multiple catch statements; finally block; usage of throw and throws. Concept of package. Integer class method: parseInt()

Unit IV **Java Applets and Graphics Programming** 20 L

  (a) Applets: Difference of applet and application, creating applets, applet life cycle, passing parameters to applets.
  (b) Graphics, Fonts and Color: The graphics class, painting, repainting and updating an applet, sizing graphics. Font class, draw graphical figures - lines and rectangle, circle and ellipse, drawing arcs, drawing polygons. Working with Colors: Color methods, setting the paint mode.
  (c) AWT package: Containers: Frame and Dialog classes, Components: Label; Button; Checkbox; TextField, TextArea.

References:

(1) Programming with Java: A Primer 4th Edition by E. Balagurusamy, Tata McGraw Hill.
(2) Java The Complete Reference, 8th Edition, Herbert Schildt, Tata McGraw Hill

Additional References:

(1) Eric Jendrock, Jennifer Ball, D Carson and others, The Java EE 5 Tutorial, Pearson Education, Third Edition, 2003.
(2) Ivan Bayross, Web Enabled Commercial Applications Development Using Java 2, BPB Publications, Revised Edition, 2006
(3) Joe Wigglesworth and Paula McMillan, Java Programming: Advanced Topics, Thomson Course Technology (SPD), Third Edition, 2004
(4) The Java Tutorials of Sun Microsystems Inc. http://docs.oracle.com/javase/tutorial

Course code	Topics for Practical	Credits
SMAT 6 AC PR		**2.5**

1. Write a Java program to create a Java class: (a) without instance variables and methods, (b) with instance variables and without methods, (c) without instance variables and with methods. (d) with instance variables and methods.
2. Write a Java program that illustrates the concepts of one, two dimension arrays.
3. Write a Java program that illustrates the concepts of Java class that includes (a) constructor with and without parameters. (b) Overloading methods.
4. Write a Java program to demonstrate inheritance by creating suitable classes.
5. Write a program that illustrates the error handling using exception handling.
6. Write a program that illustrates the concepts of stream classes.
7. Write a Java applet to demonstrate graphics, Font and Color classes.
8. Write a Java program to illustrate AWT package.

Theory: At the end of the semester, examination of three hours duration and 100 marks based on the four units shall be held for each course.

Pattern of **Theory question** paper at the end of the semester for *each course* :
There shall be Five compulsory Questions of 20 marks each with internal option.
Question1 based on Unit I, Question 2 based on Unit II, Question 3 based on Unit III, Question 4 based on Unit IV and Question 5 based on all four Units combined.

Semester End Practical Examination (Total 100 marks)

Practicals: Total evaluation is of 100 marks per semester:
        (a) Journal   ……. 10 Marks.
        (b) Viva based on project/ assignment submitted   ………10 Marks
        (c) At the end of the semester, examination of 3 hours duration   ………80 marks.

1. Pattern of **Practical question** paper at the end of the semester:
   There shall be FOUR compulsory questions of Twenty marks each with internal option.
2. A certified journal must contain minimum of 10 programs (mentioned in the practical topics)
3. The questions in the practical examination to be asked from the practicals mentioned in the practical topics. A few simple modifications may be expected during the examination.
4. Number of students per batch for practical should not exceed 20. Not more than two students are made to do practicals on one computer at a time.

Workload

Theory : 4 lectures per week .
Practicals: 2 practicals each of 2 lecture periods per week per batch. Two lecture periods of the practicals shall be conducted in succession together on a single day.

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