II- Year II- Semester	Name of the Course	L	T	P	C
PC2201	Advanced Java Programming	3	0	0	3
Prerequisites: Java Programming					

Course Objectives:

1. To impart the knowledge on collection framework.
2. To make the students to develop network-based applications.
3. To introduce XML and processing of XML Data with Java.
4. To introduce Server-side programming with Java Servlets and JSP

UNIT-I   10 Hours

The Collections Framework (java.util)- Collections overview, Collection Interfaces, The Collection classes- Array List, Linked List, Hash Set, Tree Set, Priority Queue, Array Deque. Accessing a Collection via an Iterator, Using an Iterator, The For-Each alternative, Map Interfaces and Classes, Comparators, Collection algorithms, Arrays, The Legacy Classes and Interfaces- Dictionary, Hash table, Properties, Stack, Vector.

UNIT-II   10 Hours

Introduction to Networking: Basics of Networking, Networking classes and Interfaces, Networking with URLs, exploring java.net package.

JDBC Connectivity: JDBC connectivity, types of Jdbc Drivers, connecting to the database, JDBC Statements, JDBC Exceptions, Manipulations on the database

UNIT-III   10 Hours

HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets;

XML: Introduction to XML, Defining XML tags, their attributes and values, Document Type Definition, XML Schemas, Document Object Model, and Extensible Style sheet Language and XSL Transformations, Parsing XML Data – DOM and SAX Parsers in java.

UNIT- IV   8Hours

Introduction to Servlets: Life cycle of a Servlet, deploying a servlet, The Servlet API, Reading Servlet parameters, Reading Initialization parameters, Handling Http Request & Responses, Using Cookies and Sessions.

UNIT-V   10 Hours

Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking.

Text Books:

1. Java The Complete Reference, Herbert Schildt, MC GRAW HILL Education, 9 th Edition, 2016

2. Internet and World Wide Web – How to program, Dietel and Nieto, Pearson.

3. Java Server Pages –Hans Bergsten, SPD O'Reilly.

Reference Books:

1. Chris Bates, "Web Programming, building internet applications", 2ndEdition, WILEY, Dreamtech, 2008.

2. Thomas A Powel, "The Complete Reference: AJAX", 1st Edition, Tata McGraw Hill, 2008.

3. Web Technologies, Uttam K Roy, Oxford University Press

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

CO1: Use various data structures using java collections. . **(Implement)**
CO2: understand the trade-offs of implementation of priority queues. **(Understand)**
CO3: Implement web based applications using features of HTML and XML. **(Implement)**
CO4: Appreciate the importance and significance of graph algorithms in building and solving real world applications. **(Analyse)**
CO5: Understand and implement algorithms for pattern matching in a text. **(Understand)**

CO-PO Mapping Matrix:

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2
CO1	-	1	1	2	-	-	-	-	-	-	-	-	2	1
CO2	-	1	2	2	-	-	-	-	-	-	-	-	2	1
CO3	-	2	2	2	-	-	-	-	-	-	-	-	2	1
CO4	-	2	2	2	-	-	-	-	-	-	-	-	2	1
CO5	-	2	2	2	-	-	-	-	-	-	-	-	2	1

Micro Syllabus of Advanced Java Programming

Unit – I : The Collections Framework (java.util)- Collections overview, Collection Interfaces, The Collection classes- Array List, Linked List, Hash Set, Tree Set, Priority Queue, Array Deque. Accessing a Collection via an Iterator, Using an Iterator, The For-Each alternative, Map Interfaces and Classes, Comparators, Collection algorithms, Arrays, The Legacy Classes and Interfaces- Dictionary, Hashtable, Properties, Stack, Vector.

Unit	Module	Micro content
I	**The Collections Framework** (java.util)	Collections overview, Collection Interfaces
		The Collection classes- Array List
		Linked List
		Hash Set, Tree Set,
		Priority Queue, Array Deque.
		Accessing a Collection via an Iterator, Using an Iterator, The For-Each alternative

		Map Interfaces and Classes
		Comparators, Collection algorithms, Arrays
		The Legacy Classes and Interfaces- Dictionary, Hashtable, Properties, Stack, Vector.

Unit – II :

Introduction to Networking: Basics of Networking, Networking classes and Interfaces, Networking with URLs, exploring java.net package.

JDBC Connectivity: JDBC connectivity, types of Jdbc Drivers, connecting to the database, JDBC Statements, JDBC Exceptions, Manipulations on the database.

Unit	Module	Micro content
II	**Introduction to Networking**	Basics of Networking
		Networking classes and Interfaces
		Networking with URLs
		exploring java.net package
	JDBC Connectivity	Database Application
		Need and Objective of JDBC
		types of Jdbc Drivers- Type1,Type2,Type3 and Type4
		Steps to connect to Database using Jdbc
		JDBC Statements- Statement, PreparedStatement and CallableStatement Interfaces
		JDBC Exceptions-SQLException and its Methods
		Manipulations on the database

UNIT – III : HTML & XML

HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets;

XML: Introduction to XML, Defining XML tags, their attributes and values, Document Type Definition, XML Schemas, Document Object Model, Extensible Style sheet Language and XSL Transformations, Parsing XML Data – DOM and SAX Parsers in java.

Unit	Module	Micro content
III	**HTML**	Standard HTML Document Structure
		Basic Text Markup, HyperLinks
		List-Unordered List, Ordered -List and Definition List
		Tables-Table related tags, Formatting of Tables, Use of COLSPAN and ROWSPAN
		Images-<img> tag and its attributes
		Forms-HTML 5 form elements, GET and POST Method
		Frames-Advantages of Frames, InlineFrames
		CSS-Levels of Style Sheets
		Style Specification Formats, Selector Forms
		The Box Model, Conflict Resolution
	XML	Basic Building blocks of XML
		Defining XML tags, their attributes and values
		Define DTD and Elements of DTD
		Internal and External DTD
		XML Schemas

		Document Object Model
		Extensible Style sheet Language and XSL Transformations- XPATH
		Parsing XML Data – DOM and SAX Parsers in java

Unit – IV: Servlets

Introduction to Servlets: Life cycle of a Servlet, deploying a servlet, The Servlet API, Reading Servlet parameters, Reading Initialization parameters, Handling Http Request & Responses, Using Cookies and Sessions.

Unit	Module	Micro content
IV	**Servlets**	Introduction Servlet
		Web server, Tomcat Installation
		deploying a servlet
		The Servlet API- javax.servlet and javax.servlet.http packages
		Reading Servlet parameters
		Reading Initialization parameters
		Handling Http Request & Responses
		Session Tracking
		Session Tracking Using Cookies and Sessions.

Unit – V: JSP

Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking.

Unit	Module	Micro content
V	**JSP**	Advantages of JSP over servlet
		The Anatomy of a JSP Page
		JSP Processing
		Declarations, Directives, Expressions and Scripting Elements
		Code Snippets, implicit objects
		Using Beans in JSP Pages
		Using Cookies and session for session tracking

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