

**PG DEPARTMENT OF COMPUTER SCIENCE**

**OUTCOME BASED SYLLABUS**

**SEMESTER I**

**PCCSA20 – JAVA PROGRAMMING**

<b>Year: I</b>	<b>Course Code:</b>	<b>Title of the Course:</b>	<b>Course Type:</b>	<b>Course Category:</b>	<b>H/W</b>	<b>Credits</b>	<b>Marks</b>
<b>Sem: I</b>	PCCSA20	Java Programming	Theory	Core	5	5	100

**Course Objectives**

1. This paper helps to enhance the knowledge in advanced features of Java and programming skill as per the industry need.
2. Using Graphics, Animations and Multithreading for designing applet based applications.
3. Design and develop GUI applications using Abstract Windowing Toolkit (AWT), Swing and event handling.
4. Designing GUI based applications using swing.
5. Design and develop Web applications using Java Server Pages.

**Course Outcomes (COs)**

1. Understand the basics of Java and AWT
2. Develop Swing-based GUI
3. Update and retrieve the data from the databases using JDBC
4. Develop client/server applications and distributed applications using RMI
5. Develop server-side programs in the form of Servlets

CO	PSO					
	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	H	M	L	M	M	L
CO2	M	L	M	H	M	M
CO3	L	M	M	M	L	H
CO4	M	M	L	M	L	M
CO5	H	M	L	L	M	L

CO	PO					
	1	2	3	4	5	6
CO1	M	M	L	M	M	L
CO2	M	L	M	H	M	M
CO3	L	H	M	M	L	H
CO4	M	M	M	H	L	M
CO5	L	M	H	M	M	L

(Low - L, Medium – M, High - H)

## Course Syllabus

### Unit I

(18 Hours)

- 1.1 Introduction to Java – Features of Java– Constructors (K1, K2)
- 1.2 Exception handling: try, catch - Throw and throws – Multithreading (K1, K2)
- 1.3 Java AWT – working with Graphics – Font – Color (K1, K3)
- 1.4 Networking – Networking Basics – Networking Classes and Interface – InetAddress – Factory Methods – Instance Methods (K2, K3)
- 1.5 InetAddress and Inet5Address – TCP/IP Client Sockets – Cookies. (K3, K4)
- 1.6 URL – URL Connection – HTTPURLConnection – URI Class (K4, K5)

### Unit II

(16 Hours)

- 2.1 Swing: JFC –Features of Swing – Swing Components (K1, K3)
- 2.2 Working with Swing – Event Handling Using Swing(K2, K3)
- 2.3 Exploring Swing: JLabel and JTextField - The Swing Buttons - JComboBox - JTree - JTable(K2, K3)
- 2.4 JDBC: Introduction- Architecture-- JDBC Environment – JDBC Driver Types (K4, K5)
- 2.5 Java, Sql Package – Data Manipulation – Data Navigation – JDBC Classes and Interfaces (K2, K3)
- 2.6 JDBC Statement Interface – Connection Interface – Statement Interface –ResultSet Interface (K3, K5)

### Unit III

(14 Hours)

- 3.1 RMI – Introduction - RMI Architecture – RMI for Distributed Computing(K2, K3)
- 3.2 Working of an RMI application - Marshalling and Unmarshalling - RMI Registry - Goals of RMI(K1, K2, K3)
- 3.3 WorkingRMI Application – Defining Remote Interface – Simple Programs(K3, K4)
- 3.4 Working Servlets: Background – Life Cycle of Servlets – Servlet ArchitectureCognitive (K2, K3)
- 3.5 Servlet API – Javax Servlet Packages – Creating Servlets – Reading Servlet Parameters, The javax.servlet.http Package(K4, K6)
- 3.6 Handling HTTP Request and Responses – Using Cookies - Simple Programs(K5, K6)

#### **Unit IV**

**(15 Hours)**

- 4.1 JSP: Introduction and Marketplace – JSP and HTTP – JSP Engines – JSP Works(K1, K2)
- 4.2 Anatomy of JSP page – Life Cycle of JSP – JSP API – JSP in IDE(K2, K3)
- 4.3 JSP Expressions – Declarations – - Scripting elements – Scriplet – Expression(K1, K4)
- 4.4 Directive Elements – Page – Include – Taglib Directive – Action Element(K4, K5)
- 4.5 Inserting Applet into JSP (K5, K6)
- 4.6 Accessing a Database from JSP (K5, K6)

#### **Unit V**

**(12 Hours)**

- 5.1 EJB: Introduction to EJB – EJB fundamentals - EJB Architecture - EJB Roles (K1, K5)
- 5.2 J2EE architecture, Enterprise application concepts(K1, K2)
- 5.3 J2EE platform, HTTP protocol, web application (K3, K5)
- 5.4 Web containers and Application servers (K2, K3, K4)
- 5.5 Java Web Frameworks: Spring MVC Overview of Spring, Spring Architecture(K3, K4, K5)
- 5.6 Hibernate 4.0 Overview of Hibernate, Hibernate Architecture(K5, K6)

#### **Text Books:**

1. Herbert Schildt (2017). The Complete Reference: Java. Tata McGraw Hill Publishing, Eighth Edition.
2. Ivan Bayross (2013). Web Enabled Commercial Applications Development using Java, 2-BPB Publications, Second Edition.
3. Phil Hanna (2013). The Complete Reference: JSP 2.0. Tata McGraw Hill Publishing.
4. UttamK.Roy (2017). Advanced Java Programming. Oxford University Press, Third Edition.

#### **Reference Books:**

1. Jim Keogh (2014). The Complete reference to J2EE. Tata McGraw-Hill.
2. Hall Brown (2015). Core Servlet and JavaServer page. Pearson Education, Second edition
3. Mike Mcgrath (2062).Java Server Pages in Easy Steps. Dreamtech Publications. Second Edition

#### **Open Educational Resources (OER):**

1. <https://www.youtube.com/watch?v=vJ-Zn4fo0MQ>
2. <https://www.tutorialspoint.com/java/index.htm>[https://www.tutorialspoint.com/php/php\\_tutorial.pdf](https://www.tutorialspoint.com/php/php_tutorial.pdf)
3. <https://www.youtube.com/watch?v=eiu2eXxeCCU>

## SEMESTER III

### PECSH20 – ELECTIVE IV B: SOFTWARE PROJECT MANAGEMENT

<b>Year: II</b>	<b>Course Code:</b>	<b>Title of the Course:</b>	<b>Course Type:</b>	<b>Course Category:</b>	<b>H/W</b>	<b>Credits</b>	<b>Marks</b>
<b>Sem: III</b>	PECSH20	Elective IV B : Software Project Management	Theory	Elective	5	4	100

### Course Objectives

1. Define and highlight importance of software project management.
2. Describe the software project management activities.
3. To highlight different techniques for software cost estimation and activity planning.
4. To discuss the notion of risks and the risk management process.
5. Train software project manager and other individuals involved in software project planning.

### Course Outcomes (COs)

1. Estimate project cost and perform cost-benefit evaluation.
2. Projects perform project scheduling, activity network analysis and risk management
3. Apply schedule and cost control techniques for project monitoring including contract management.
4. Apply quality models in software projects for maintaining software quality and reliability.
5. Use suitable project organization structure, leadership, decision and motivation styles, proper safety and ethical practices and be responsible to the society.

CO	PSO					
	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	H	M	L	M	M	L
CO2	M	L	M	H	M	M
CO3	L	M	M	M	L	H

CO4	M	M	L	M	L	M
CO5	H	M	L	L	M	L

CO	PO					
	1	2	3	4	5	6
CO1	L	M	L	M	L	L
CO2	M	M	M	L	L	H
CO3	M	H	L	M	M	L
CO4	L	M	L	M	L	H
CO5	L	M	H	L	H	M

(Low - L, Medium – M, High - H)

## Course Syllabus

### Unit I

(13 Hours)

- 1.1 Project Definition-Software Project Basics (K1)
- 1.2 Introduction-Types of Software Project (K2, K4)
- 1.3 Classification of Software projects - Activities covered by software project management (K2, K3)
- 1.4 Methods and Methodologies (K4)
- 1.5 Stake holders-Business Case (K3, K5)
- 1.6 Management Control-Software process and process models (K2, K4)

### Unit II

(14 Hours)

- 1.1 Project Planning Infrastructure (K2, K4)
- 1.2 Process Database (K2)
- 1.3 Contents of PDB-A sample entry-the capability baseline- Process asserts and body of knowledge system (K4, K5)
- 1.4 process planning-Infosys development process (K2, K4)
- 1.5 Requirement change management (K4)
- 1.6 Process planning for the ACIC project (K3, K4)

### Unit III

(11 Hours)

- 3.1 Effort estimation and scheduling (K2, K3, K4)
- 3.2 Effort estimation models-Estimation schedule (K3, K5)
- 3.3 Effort Estimation-Scheduling (K3, K4)
- 3.4 Quality Planning-Quality Concepts-Quantitative quality management planning (K2, K4, K6)
- 3.5 Defect prevention planning (K2, K5)
- 3.6 The quality plan of the ACIC project (K2)

#### **Unit IV**

**(12 Hours)**

- 4.1 Risk management- Concept of risk and risk management (K2, K4)
- 4.2 Risk assessment (K2, K3)
- 4.3 Risk Control – Examples-Measurement and Tracking planning (K3, K5)
- 4.4 Concepts in measurement-measurements (K2)
- 4.5 Project tracking (K4)
- 4.6 The ACIC measurement and tracking plan (K2, K4)

#### **Unit V**

**(10 Hours)**

- 1.1 The project management plan (K2, K4)
- 1.2 Team management-customer communication and issue resolution (K5)
- 1.3 The structure of the project management plan (K2, K4)
- 1.4 The ACIC project plan (K2, K3)
- 1.5 Reviews-The Review process (K2, K3)
- 1.6 Data Collection-Monitoring and Control (K2)

#### **Text Books:**

1. PankajJalote (2002). Software Project Management in Practice. Published by Pearson Education. Second Edition.
2. Bob Hughes, Mike Cotterell, Rajib Mall (2011). Software Project Management. McGraw Hill. Fifth Edition.

#### **Reference Books:**

1. Greg Horine (2012). Project Management Absolute Beginner's Guide. Que Publishing. Third Edition.
2. Timothy Adolfo Villafiorita (2014). Introduction to Software Project Management AuerbachPublications.
3. MuraliChemuturi, ThomasM.cagley (2012). Mastering software project management. J.ross publishing.

#### **Open Educational Resources (OER):**

1. <https://books.google.co.in/book?id=BDfPDwAAQBAJ&printsec=frontcover#v=onepage&q&f=false>
2. <https://www.amazon.in/Software-Project-Management-Practice-Pankaj/dp/0201737213>
3. [https://www.youtube.com/watch?v=p\\_vs7yGBKGg](https://www.youtube.com/watch?v=p_vs7yGBKGg)
4. <https://www.youtube.com/watch?v=uTECToTO9Ec>
5. [https://www.youtube.com/watch?v=HyGb\\_eaT-U8](https://www.youtube.com/watch?v=HyGb_eaT-U8)

## INDEPENDENT ELECTIVE

### SEMESTER I

#### PICSA20 – SOFTWARE QUALITY ASSURANCE

<b>Year: I</b> <b>Sem: I</b>	<b>Course Code:</b> PICSA20	<b>Title of the Course:</b> Software Quality Assurance	<b>Course Type:</b> Theory	<b>Course Category:</b> Independent Elective	<b>H/W</b> -	<b>Credits</b> 2	<b>Marks</b> 100
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#### Course Objectives

1. To know the behavior of the testing techniques and to design test cases to detect the errors in the software.
2. To get insight into the levels of testing in the user environment.
3. To understand standard principles to check the occurrence of defects and its removal.
4. To learn the functionality of automated testing tools to apply in the specialized environment.  
To understand the models and metrics of software quality and reliability.
5. To generate and apply the test cases using the automated testing tool.

#### Course Outcomes (COs)

1. Test the software by applying various testing techniques.
2. Able to debug the project and to test the entire computer-based systems at all levels.
3. Test the applications in the specialized environment using various automation tools.
4. To evaluate the applications using software testing tools.
5. Apply quality and reliability metrics to ensure the performance of the software.

CO	PSO					
	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	H	M	L	M	M	L
CO2	M	L	M	H	M	M
CO3	L	M	M	M	L	H
CO4	M	M	L	M	L	M

CO5	H	M	L	L	M	L
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CO	PO					
	1	2	3	4	5	6
CO1	H	L	M	L	M	L
CO2	H	L	M	L	M	L
CO3	L	L	H	M	L	M
CO4	M	L	M	L	H	M
CO5	L	L	L	M	L	H

(Low - L, Medium – M, High - H)

## Course Syllabus

### Unit I

- 1.1 Software quality Challenge(K1, K2)
- 1.2 Software quality (K3)
- 1.3 Software quality assurance (K2)
- 1.4 Software quality factors (K2, K4)
- 1.5 Components of SQA(K3)
- 1.6 Management SQA Components (K4)

### Unit II

- 2.1 Pre-Project Software Quality Assurance System (K1, K6)
- 2.2 Contract review (K1, K2)
- 2.3 Developing plan (K2)
- 2.4 Quality plan (K3, K4)
- 2.5 Integrating quality activities in the project life cycle(K1, K4)
- 2.6 Reviews(K2)

### Unit III

- 3.1 Software Testing Strategies (K1)
- 3.2 Software Testing Implementations (K2, K6)
- 3.3 Automated Testing
- 3.4 Assuring the Quality of Software Maintenance Components (K2, K3)
- 3.5 Maintenance software quality assurance tools (K3)

### 3.6 Case Tools (K4)

#### Unit IV

- 4.1 Software Quality Infrastructure Components (K2)
- 4.2 Procedures and work instructions (K1, K2)
- 4.3 Supporting quality devices (K2, K3)
- 4.4 Staff training and certification (K4, K6)
- 4.5 Corrective action (K5)
- 4.6 Preventive action (K4)

#### Unit V

- 1.1 Configuration Management (K1, K6)
- 1.2 Documentation control (K2, K3)
- 1.3 Project progress control (K2, K3)
- 1.4 Cost of software quality (K4, K5)
- 1.5 Auditing and Control (K3, K4)
- 1.6 Vendor control (K5)

#### Text Books:

1. Daniel Galin - Software Quality Assurance, 2<sup>nd</sup> Edition – Pearson Education, 2011.
2. MilindLimaye – Software Quality Assurance – Tata McGraw Hill Publication, 2011.

#### Reference Books:

1. Ian Sommerville – Software Engineering, 5<sup>th</sup> Edition – Addison Wesley Publication, 2002.
2. Roger S. Pressman – Software Engineering: A Practitioner's Approach, 5<sup>th</sup> Edition – McGraw Hill International Edition, New York, 2000.
3. PankajJalote – An Integrated Approach to Software Engineering, 2<sup>nd</sup> Edition – Narosa Publication
4. Richard Fairly - Software Engineering Concepts – Tata McGraw Hill, 1997.

#### Open Educational Resources (OER):

1. [https://www.tutorialspoint.com/software\\_quality\\_management/software\\_quality\\_management\\_sqa\\_components.htm](https://www.tutorialspoint.com/software_quality_management/software_quality_management_sqa_components.htm)
2. <https://www.youtube.com/watch?v=B6pQVUmBGps&list=PLy9U5GDpYZVPYwx2SBmxsFODDnBnsfG9w>

