



# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav Institute of Computer Applications

Name of Program: M.Sc. (CS)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MSCCS401	Compulsory	Software Testing and Project Management	3	1	0	4	60	20	20	0	0

### Course Education Objectives (CEOs):

- To understand Software Project Management activities.
- To gain knowledge of Software Testing.

### Course Outcomes (COs):

After successful completion of this course the students will:

- Understand the concepts of Software Project Management.
- Understand the Risk Management and Software Configuration Management .
- Learn about Software quality and Software quality assurance activities.
- Learn the basics of testing and testing methodologies.
- Understand the concepts of Computer Aided Software Engineering (CASE).
- Learn the concepts of Software Re-Engineering.

### UNIT – I

**Overview of Project Management:** Project Management – Definitions; Factors Influencing Project Management – Project Manager, Project Management Activities, Stakeholders; Project Development Phases; Project Charter; Statement of Work (SoW).

**Project Planning:** Tasks in Project Planning; Work Breakdown Structures (WBS); Planning Methods; Overview of Development Life Cycle Models.

**Risk Management:** Concepts Risk Management; Risk Management Activities; Types of Risks; Risk Components and Drivers; Risk Prioritization.

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### UNIT – II

**Configuration Management:** Software Configuration Management (SCM) – Baselines, Software Configuration Items (SCI); SCM Process; Identification of Objects in the Software Configuration; Configuration Audit; Status Reporting; Goals of SCM.

**Team Development and Conflict Management:** Basic Concepts; Organization Types – Centralized-control team organization, Decentralized-control team organization, Mixed-control team organization.

### UNIT – III

**Software Quality Assurance:** Defining Software Quality, Software Quality Assurance Activities; Software Quality Standards – ISO Standards for Software Organization, Capability Maturity Model (CMM), Techniques to enhance Software Quality.

**Testing :** Software Testing Concepts; Introduction to testing, Brief history of testing, Testing Opportunities, Testing Principle, Types of Software Testing – Manual Testing, Automated Testing.

### UNIT – IV

**Types of Testing :** Functional , Non-functional, **Testing Techniques:** Boundary value analysis, Equivalent Class Partition, Error Guessing, Partition Table. Test Design, Test Methodology, Test Scenario, Test Cases, Test Case Template, Types of Test Cases.

### UNIT - V

**Computer Aided Software Engineering (CASE) Tools:** CASE Concepts; Classification of CASE Tools; Architecture of CASE Environment, Benefits of CASE.

**Software Re-Engineering:** Software Maintenance Problems; Redevelopment vs. Reengineering; Software Reengineering Process Model.

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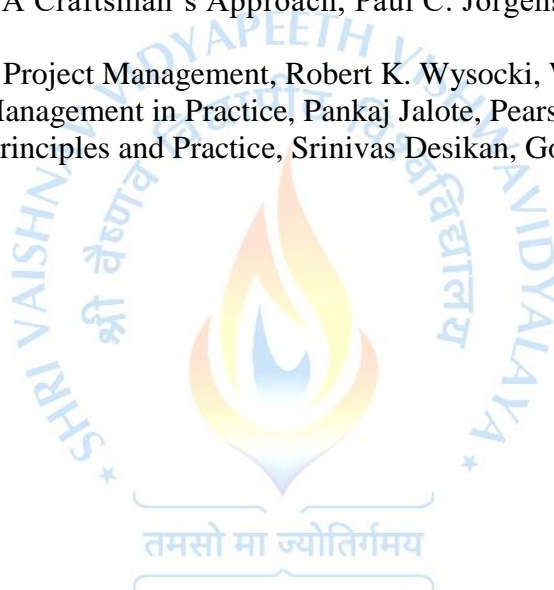
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MSCCS401	Compulsory	Software Testing and Project Management	3	1	0	4	60	20	20	0	0

### Suggested Readings:

1. Software Project Management , Bob Hughes, Mike Cotterell and Rajib Mall, Fifth Edition, Tata McGraw Hill, New Delhi, 2012.
2. Software Testing A Craftsman's Approach, Paul C. Jorgensen, Fourth Edition, CRC Press.
3. Effective Software Project Management, Robert K. Wysocki, Wiley Publication,2011.
4. Software Project Management in Practice, Pankaj Jalote, Pearson
5. Software Testing Principles and Practice, Srinivas Desikan, Gopaldaswamy Ramesh, Pearson



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MSCCS402	Compulsory	Internals of Linux	3	1	0	4	60	20	20	0	0

**Legends:** L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.

**\*Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class activities, given that no component shall exceed more than 10 marks

### Course Education Objectives (CEOs):

- To understand the concepts of Linux operating system.
- To understand the commands used for operating Linux Operating System.
- To understand the File Management in Linux.
- To understand the Memory Management in Linux.

### Course Outcomes (Cos):

After the successful completion of this course students will be able to

- Learn the basic concepts of Linux Operating System.
- Operate the Linux based system through basic commands.
- Understand and use the system calls to manage the overall system of Linux.
- Learn the internal management of Linux Operating System.

## UNIT I

**Introduction to UNIX OS :** Features of UNIX, UNIX System Organization, Operating System Services, Assumption about Hardware, UNIX / Linux Basic Commands, **Text Editing** : Types of Editors, Fromed to ex to v, Basic Editor Tasks with vi, Editing Multiple Files, Named Buffers, vi Start up File, Redirection and Pipe; Shell and Types of Shell, Shell commands.

## UNIT II

Architecture of UNIX Operating System, Introduction to System Concept, Kernel Data Structure, System Administration;

**The Buffer Cache:** Buffer Header, Structure of Buffer Pool, Buffer Retrieval, Reading and writing disks blocks, Advantages and disadvantages

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### UNIT III

**Internal representation of files:** I-nodes, Structure of a regular file, Directories, Conversion of pathname to an inode, Super block, I-node assignment to a new file, Allocation of disk block.

**System calls for the file system:** Open, Read, Write, File and record blocking, Adjusting the position of file I/O –seek, Close, File creation, Creation of Special Files, Change directory and change root, Change owner and change mode, Stat and fstat, Pipes, Dup, Mounting and Unmounting file systems, Link, Unlink, File System Maintenance.

### UNIT IV

**UNIX Processes:** The UNIX Process Model, Process States, Monitoring and Controlling Processes;

**The Structure of Process:** Process states and transitions, Layout of system memory, The context of a process, Saving the context of a process, Manipulation of a process address space, Sleep;

**Process Control:** Process creation, Signals, Process termination, Awaiting process termination, Invoking other programs, The user-id of a process, Changing the size of a process, The shell, System boot and init process;

### UNIT V

**Process Scheduling and time:** Process scheduling, System calls for time, Clock;

**Memory Management Policies:** Swapping, Demand paging, Hybrid system with swapping and demand paging.

### Suggested Readings:

1. The Design of the UNIX Operating System, Maurice J. Bach (Pearson Education)
2. UNIX Shell Programming, Y. P. Kanetkar (BPB)
3. UNIX Concepts & Applications, Sumitabha Das (THM)
4. Advanced Programming in UNIX Environment, Richard Stevens (Pearson Education)
5. Vijay Mukhi's The C Odyssey UNIX The Open Boundless C, Meeta Gandhi,
6. Tilak Shetty, Rajiv Shah (BPB Publication)

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MSCCS403	Compulsory	Advanced Java	3	1	0	4	60	20	20	0	0

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### Course Education Objectives (CEOs):

To become familiar with the advanced features of Java Language.

- To learn the concepts of JDBC and Socket Programming.
- To develop Web Applications using Servlets / JSP and deploy in popular servers like Tomcat.

### Course Outcomes (Cos):

After the successful completion of this course students will be able to

- Learn the basic concepts of JDBC and Socket Programming.
- Develop the web applications using the JSP and Servlets.

### **Syllabus:**

#### **UNIT – I**

JDBC Programming: The JDBC Connectivity Model, Database Programming: Connecting to the Database, Creating a SQL Query, Getting the Results, Updating Database Data, Error Checking and the SQL Exception Class, Statement Interface, Prepared Statement, Callable Statement, Result Set Interface, Updatable Result Sets, JDBC Types, Executing SQL Queries, Executing SQL Updates.

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### UNIT – II

Servlet API and Overview: Servlet Model: Overview of Servlet, Servlet Life Cycle, HTTP Methods Structure and Deployment descriptor, Servlet Context and Servlet Config interface, Attributes in Servlet, Request Dispatcher interface, Cookies and Session Management: Understanding state and session, Understanding Session Timeout and Session Tracking, URL Rewriting.

### UNIT – III

Java Server Pages (JSP): JSP Technologies, Understanding the Client-Server Model, Understanding Web server software, Configuring the JSP Server, Handling JSP Errors, JSP Translation Time Errors, JSP Request Time Errors, Creating a JSP Error Page, Remote Method Invocation (RMI): RMI Architecture.

### UNIT – IV

Enterprise Java Beans (EJB): Types of EnterpriseJava beans, Session Bean & Entity Bean, Features of Session Bean, Life-cycle of Stateful Session Bean, Features of Entity Bean, Life-cycle of Entity Bean, Container managed Transactions & Bean-managed Transactions, Implementing a container-managed Entity Bean.

### UNIT – V

Struts: Introduction to the Apache Struts, MVC Architecture, Struts Architecture, How Struts Works?, Introduction to the Struts Controller, Introduction to the Struts Action Class, Using Struts Action from Class, Using Struts HTML Tags, Introduction to Struts Validator Framework, Client Side Address Validation in Struts, Custom Validators Example.

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### Text Books:

1. Head First EJB 3.0 by Kathy Sierra, Bert Bates, Publisher: O'Reilly Media
2. Head First Servlets and JSP by Bryan Basham, Kathy Sierra & Bert Bates, Publisher: O'Reilly Media
3. Programming Jakarta Struts, 2nd Edition by Chuck Cavaness, Publisher: O'Reilly Medi.

### Reference Books:

1. Java the Complete Reference, ninth edition by Herbert Schild, Publisher: McGraw Hills
2. N.P. Gopalan and J. Akilandeswari, "Web Technology- A Developer's Perspective", PHI, 2<sup>nd</sup> edition
3. Eric Jendrock, Jennifer Ball, Debbei Carson, "The Java EE5 Tutorial", Pearson, 3<sup>rd</sup> edition, 2007.

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