COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY END SEM University Exam	THEORY Two Term Exam	THEORY Teachers Assessment*	PRACTICAL END SEM University Exam	PRACTICAL 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.

Name of Program: M.Sc.(CS)

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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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Vishwavidyalaya, Indore	Vishwavidyalaya, Indore		

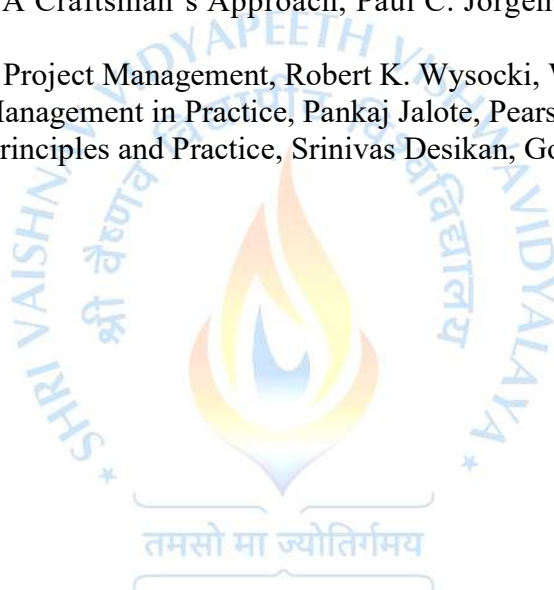# Shri Vaishnav Vidhyapeeth Vishvavidhyalaya, Indore

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

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, Gopalaswamy Ramesh, Pearson

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COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
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							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
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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MSCCS402	Compulsory	Internals of LINUX	3	1	0	4	60	20	20	0	0

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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Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.
*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall exceed 10 Marks)

Course Education Objectives (CEOs):
This course covers the implementation of advanced program designs with the tools available in the Java programming language. After a detailed review of the fundamentals, advanced topics will include the Graphical User Interface (GUI) for applications, 2D graphics, multimedia, multithreading and client-server models for networking and database connectivity. If time and interest permits, the class may introduce the Java tools for generics and collections.

Course Outcomes (COs):
Students will build on their understanding of Object-Oriented Design (OOD) and Programming (OOP) in Java and learn to write robust, Graphical User Interface (GUI) applications and applets. Students will gain a practical familiarity with 2D graphics, multimedia, programming for concurrency, networking and database connectivity. Students may investigate programming for Web Services, if time and interest permits.

Syllabus:
UNIT – I
Java Networking: Network Basics and Socket overview, TCP/IP client sockets, URL, TCP/IP server sockets, Datagrams, java.net package Socket, ServerSocket, InetAddress, URL, URLConnection.
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 SQLException Class, Statement Interface, PreparedStatement, CallableStatement, ResultSet Interface, Updatable Result Sets, JDBC Types, Executing SQL Queries, Executing SQL Updates.

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

UNIT - II

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

UNIT – III

Java Server Pages: JSP Overview: The Problem with Servlets, Life Cycle of JSP Page, JSP Processing, JSP Application Design with MVC, JSP Directives, JSP Action, JSP Implicit Objects, JSP Form Processing, JSP Session and Cookies Handling, JSP Session Tracking JSP Database Access, JSP Standard Tag Libraries, JSP Custom Tag, JSP Expression Language, JSP Exception Handling, JSP XML Processing.

UNIT – IV

Java Server Faces2.0: Introduction to JSF, JSF request processing Life cycle, JSF Expression Language, JSF Standard Component, JSF Facelets Tag, JSF Convertor Tag, JSF Validation Tag, JSF Event Handling and Database Access.

UNIT – V

Hibernate4.0: Overview of Hibernate, Hibernate Architecture, Hibernate Mapping Types, Hibernate O/R Mapping, Hibernate Annotation.
Java Web Frameworks: Spring MVC: Overview of Spring, Spring Architecture, bean life cycle, XML Configuration on Spring, Aspect – oriented Spring, Managing Database, Managing Transaction.

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

Text Books:
1. Patrick Naughton and HerbertzSchildt, "Java-2: The Complete Reference", TMH, 7th edition, 2002.
2. Jim Keogh, "J2EE: The complete Reference", McGraw-Hill Education (India) Pvt Limited, Edition 1.
3. Rick Darnell, "HTML 4 unleashed", Techmedia Publication, 2000
4. Paul Dietel and Harvey Deitel, "Java How to Program", PHI, 8th edition, 2010.

Reference Books:
1. E. Balagurusamy, "Programming with Java: A Primer", TMH, 1998.
2. N.P. Gopalan and J. Akilandeswari, "Web Technology- A Developer's Perspective", PHI, 2nd edition
3. Eric Jendrock, Jennifer Ball, Debbei Carson, "The Java EE5 Tutorial", Pearson, 3rd edition, 2007.