# Mandsaur University

| Subject Name | L | T | P | Credit |
|---|---|---|---|---|
| Software Engineering | 3 | 1 | - | 4 |

**Unit-1**
Introduction: The product and the process, program v/s software products, Emergence of software engineering, software development life cycle models, classical waterfall, iterative waterfall, prototyping, evolution, spiral & RAP model, comparison of various life cycle models, project management process, process management process.

**Unit-II**
**Software Requirement Analysis & Specification (SRAS):** Need for software requirement specification, requirement process, requirement analysis, requirement specification, planning a software project; cost estimation, project scheduling, staffing & personnel planning, software configuration management, plans: quality assurance plan, risk management.

**Unit-III**
**Software Design:** Criteria for Software design, software design & design principle; module level concepts: Coupling and Cohesion, design notation & specifications, design methodology, verification, object oriented design: Basic concepts, design methodology & Metrics, object oriented Vs function oriented design, detailed design.

**Unit-IV**
Coding and Testing :Standard guideline for coding, programming practices, testing fundamentals, unit testing, verification Vs validation, black box & white box testing, functional testing, structural testing, object oriented program testing.

**Unit-V**
Software reliability & quality assurance: Reliability metrics, growth and modeling, software quality management system, evolution, ISO 9000. CASE: scope and benefit, support in software life cycle, CASE tools, hardware and environmental requirements, architecture of a CASE environment. Software maintenance.

**References:**
1. Pankaj Jalote: An Integral Approach to Software Engineering, Narosa
2. Rogers Pressman: Software Engineering, a practitioner's approach, MGH
3. Rajib Mall: Fundamental of Software Engineering, PHI 4. Richard Farley: Software Engineering Concept, TMH

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| Subject Name | L | T | P | Credit |
|---|---|---|---|---|
| Programming in JAVA | 3 | 1 | 4 | 6 |

**Unit-I**
Introduction to C/C++, History of Java: Comparison of Java and C++, Java as an object oriented language: Java Features, Data types, Operators, Operators precedence and associatively, Type conversion, The decision making–if, if....else, switch, loops–for, while, do...while, special statements–return, break, continue, labeled break, labeled continue, arrays, keywords.

**Unit-II**
**CLASSES, OBJECTS AND METHODS:** - Introduction; Defining a Class; Adding Variables; Adding Variables; Adding Methods; Creating Objects; Accessing Class Members; Constructors; Methods Overloading; Static Members; Nesting of Methods; Inheritance: Extending a Class; Overriding Methods; Final Variables and Methods; Final Classes; Finalizer Methods; Abstract Methods and Classes; Visibility Control.

**Unit-III**
Strings; String functions: Vectors; Wrapper Classes. INTERFACES: Introduction; Defining Interfaces; Extending Interfaces; Implementing Interfaces; Accessing Interface Variables, Implementing Multiple Inheritance using Interfaces.

**Unit-IV**
**PACKAGES:** Introduction; System Packages; Using System Packages; Naming Conventions; Creating Packages; Accessing a Package; Using a Package; Adding a Class to a Package; Hiding Classes.

**Unit-V**
**Multithreading and Exception Handling:** Basic idea of multithreaded programming, The lifecycle of a thread, Creating thread with the thread class and runnable interface, Basic idea of exception handling, The try, catch and throw, throws and finally in exception handling.
**Applets:** Applet security restrictions, the class hierarchy for applets, Life cycle of applet, HTML Tags for applet.

**Reference Books:**
1. Programming In Java, E-Balagurusami, Tata McGraw Hill
2. Mastering Java, BPB Publications
3. Naughton & Schildt "The Complete Reference Java 2", Tata McGraw Hill

**List of Experiments**

1. Write a hello world program and write down the steps to compile and run it in command line.
2. Write a program for calculating factorial of given no.
3. Write a program for bitwise operator.
4. Write a program for calculating area of rectangle using class.
5. Write a program using parameterized constructor.
6. Write a program for method overloading.
7. Write a program for static members.
8. Write a program for single level inheritance.
9. Write a program for multilevel inheritance.
10. Write a program for method overriding.
11. Write a program for to use of abstract method and class.

12. Write a program for use of string class.
13. Write a program for vector class.
14. Write a program for implementing interface.
15. Write a program for thread using thread class.
16. Write a program for thread using runnable interface.
17. Write a program  for sleep, yield, stop methods of thread class
18. Write a program for creating applet.
19. Write a program for passing parameter to applet.
20. Write a program for getting input from user in applet.

| Subject Name | L | T | P | Credit |
|---|---|---|---|---|
| PHP Programming | 3 | 1 | 4 | 6 |

**Unit-I**
Introduction to PHP, History of PHP, Web Brower, Server, Xampp, Installation and Configuration files, How PHP scripts work, Basic PHP syntax, PHP data types, Variable, Constants, Variable scope, Operators, Variable manipulation, Dynamic variables, Static vs. Dynamic Optimization, PHP vs. JAVA.

**Unit-II**
If, else if, switch statement, loops: while, do while, for, foreach, breaking out of loops: Break, Continue, and exit. **Array:** Indexed arrays, Associative arrays, Multidimensional arrays, Getting the size of an array, Looping through an array, Looping through an associative array, Sorting arrays, Sorting an associative arrays. Methods: count, sum, sort, rsort, asort, arsort, ksort, krsort, explode, implode, trim.

**Unit-III**
Function, Creating a function, Returning value from function, User-defined functions, Dynamic function calls, passing arguments by value, passing arguments by reference.
**Advance PHP:** Object oriented concepts, Define a class, Class attributes, Object: Creating an object, Object properties, Object methods, constructors and destructors, Class constants, Static method, inheritance, Abstract classes, Final keyword, Interface.
**Exception Handling:** Understanding Exception and error, Try, catch, throw.

**Unit-IV**
**Working with Form:** GET and POST data, Combine HTML and PHP code, Create user Forms using database, File Inclusion: Include(), Require(), Importing user input, Accessing user input, Using hidden fields, Redirecting the user, Upload a File, Delete a File.

**Unit-V**
Introduction to RDBMS, Connection with MySQL Database, Performing basic database operations (DML) (Insert, Delete, Update, Select), Setting query parameter, Executing query.
**Session and Cookies:** Introduction to Session Control, Creating Session, Set Session, Destroying Session, what is a Cookie, Creating Cookies, Set Cookies, Destroying Cookies, registering Session variables.

**Reference Books:**

1. Learning PHP, MySQL, By O' riley Press

2. Eric Filson , Erick Rosebrock, *Setting up LAMP: Getting Linux, Apache, MySQL, and PHP Working Together, SyBex (2004).*

3. Matt Doyle, Beginning PHP 5.3, Wiley (2010).

**List of Experiments**

1. Write a program for simple arithmetic operations.

2. Write a program for finding greatest number among two numbers.

3. Write a program for the greatest number among the three numbers.

4. Write a program for finding an even or odd number.

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5. Write a program for finding leap year.

6. Write a program for swap two numbers using a third variable.

7. Write a program for swap two numbers without third variable.

8. Write a program to generate multiplication of the table which is given by the user.

9. Write a generate multiplication of the table with the given condition.

10. Write a program to check given number is prime or not?

11. Write a program for printing Fibonacci series?

12. Write a program to find sum & average of array element?

13. Write a program for finding area of shapes using functions. a. Rectangle b. Square c. Circle d. 4. Triangle

14. Write a program for finding area of shapes using switch case. a. Rectangle b. Square c. Circle d. Triangle

15. Write a program for arithmetic operation using switch case.

16. Write a program for arithmetic operation using functions.

17. Write a program to swap two numbers using a third variable using a function?

18. Write a program to swap two numbers without using a third variable using a function.

19. Create a user Registration form (Field Name: FirstName, LastName, Username, Email, Password, Address) with MySQL database connection. .

20. Create a user Login form (Field Name: Username, Password. Note: Username and a. Password must be 7 characters/digits) with MySQL database connection.

21. Make a final dynamic website using HTML, CSS CSS3, JS, Ajax, PHP.

| Subject Name | L | T | P | Credit |
|---|---|---|---|---|
| Advanced Server side Scripting Using Node.js | 3 | 1 | 4 | 6 |

**Unit-I**
Introduction, Advantages of Node JS, Traditional Web Server Model, Node.js Process Model, **Setup Dev Environment:** Install Node.js on Windows, Working in REPL terminal, Node JS Console, Functions, Buffer, Module, Module Types , Core Modules, Local Modules ,Module. Exports

**Unit-II**
Package Manager (NEPM), Installing Packages Locally , Adding dependency in package.json ,Installing packages globally, Updating packages, Creating web server ,Handling http requests ,
Sending requests

**Unit-III**
Fs.readFile, Writing a File, Writing a file asynchronously, Opening a file, Deleting a file, Other IO Operations, Core Node JS debugger, Debugging with Visual Studio
**Events:** Event Emitter class, Returning event emitter, Inhering events.

**Unit-IV**
**Express.JS**: Configuring routes, working with express. **Serving Static Resources:** Serving static files, working with middleware. **Database connectivity:** Connection string, Configuring Working with select command, Updating records, Deleting records

**Unit-V**
Template Engine, What is Jade, What is vash,  Global Objects, Utility Modules, Web Module, Express Framework, RESTFul API, Scaling Application, Packaging.


**Reference Books:**
1. Node.js IN ACTION: by "Mike Cantelon, Marc Harter T.J., Holowaychuk, Nathan Rajlic" "Manning Publications Co."
2. Learning Node: Moving to the Server-Side by "Shelley Powers" O'REILLY

| Subject Name | L | T | P | Credit |
|---|---|---|---|---|
| Web Application Development Using Python | 3 | 1 | 4 | 6 |

**Unit-I**
**Revision of Python basics:** Data types, variables, conditional statements, loops etc, Introduction to various frameworks, introduction to DJango framework for web development, installing and configuring DJango and Python for web development.

**Unit-II**
 **Getting started with Django:** Setting up database connections, Managing Users & the Django admin tool, Installing and using 'out of the box' Django features

**Unit-III**
**Django URL Patterns and Views:** Designing a good URL scheme, Generic Views, **MVT:** Django's take on MVC: Model, View and Template, Small application using MVT, About the 3 Core Files: models.py, urls.py, views.py, Django project concepts

**Unit-IV**
**Django Form and Field validation:** Form classes, Validation: is_valid, full_clean, validate (), to_python (), run_validators (), clean (), raising Validation_Error

**Unit-V**
Authentication, Advanced Forms processing techniques, Managing Users & the Django admin tool, Installing and using 'out of the box' Django features ,DJango Session, Deploying DJango, Cache framework, Security, Django admin site, Request Response object,Django template.

**Reference Books:**
1. Django Unleashed: by Andrew Pinkham
2. The Definitive Guide to Django: by Adrian Holovaty
3. Lightweight Django  by Elman and Lavin

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| Subject Name | L | T | P | Credit |
|---|---|---|---|---|
| Data Warehousing and Mining | 3 | 1 | - | 4 |

**Unit-I**
**Data warehouse:** Introduction to Data warehouse, Definition, Difference between database systems and data warehouses. Data warehouse Characteristics, Data warehouse Architecture and its Components.

**Unit-II**
**Data Mining:** Introduction, What is Data Mining, Definition, KDD, KDD Vs Data Mining, DBMS Vs Data Mining, Classification of Data Mining System, Data Mining Functionalities, Data Mining Technique, Major Issues in Data Mining.

**UNIT- III**
**Data Preprocessing:** Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Data Mining Primitives, Languages, and System Architectures, Concept Description: Characterization and Comparison, Analytical Characterization.

**Unit-IV**
**BUSINESS ANALYSIS**: Data Warehouse and OLAP Technology for Data Mining: Online Analytical Processing (OLAP), Differences between Operational Database Systems and Data Warehouses, a multidimensional Data Model, OLAP Guidelines, Multidimensional Vs Multi relational OLAP, Data Warehouse Implementation, Data Cube Technology.

**Unit-V**
Cluster Analysis, Types of Data, Categorization of Major Clustering Methods, K-means, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid Based Methods, Model Based Clustering Methods, Clustering High Dimensional Data, Constraint Based Cluster Analysis, Outlier Analysis, Data Mining Applications.

**Reference Books:**
1. J. Han and M. Kamber, "Data Mining: Concepts and Techniques", Morgan Kaufmann Pub.
2. Berson "Dataware housing, Data Mining & DLAP", @004, TMH.
3. W. H. Inmon "Building the Datawarehouse" , 3ed, Wiley India.
4. Anahory, "Data Warehousing in Real World", Pearson Education.
5. Adriaans, "Data Mining", Pearson Education.
6. A.K. Pujari, "Data Mining Techniques", University Press, Hyderabad

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| Subject Name | L | T | P | Credit |
|---|---|---|---|---|
| Cloud Computing | 3 | 1 | - | 4 |

## Unit I

Internet Vs Intranet, Growth of Internet, ISP, ISP in India, WORLD WIDE WEB (WWW) - Web server, Introduction: Historical development, Characteristics of cloud computing as per NIST, Cloud Stakeholders, Advantages & Disadvantages of Cloud Computing.

## Unit II

Cloud Computing Service Models: IaaS, SaaS, PaaS, Types of Cloud Computing, Cloud computing environments, Cloud services requirements, Cloud and dynamic infrastructure, Cloud Adoption and rudiments, Vision of Cloud Computing, Cloud Service Providers.

## Unit III

Cloud Deployment Models ,Grid computing, Grid- The Way to cloud, Grid Computing Vs Cloud Computing, Grid Computing and Utility Computing, Types of utility cloud services.

## Unit IV

Cloud Computing Architecture: Cloud Reference Model, Cloud Interoperability & Standards, Scalability, High Availability and Fault Tolerance, Cloud Solutions: Cloud Ecosystem, Cloud Business Process Management, Cloud Service Management, Cloud Offerings: Cloud Analytics, Testing Under Control.

## Unit V

Overview of cloud applications: ECG Analysis in the cloud, Protein structure prediction, Gene Expression Data Analysis ,Satellite Image Processing ,CRM and ERP ,Social networking.

**Reference Books:**

1. "Cloud Computing for Dummies" (Wiley India Edition), 2010, Bloor R., Kanfman M., Halper F. Judith Hurwitz.
2. "Cloud Computing: Principles and Paradigms", Rajkumar Buyya, James Broberg, Andrzej    M. Goscinski, John Wiley and Sons Publications, 2011.
3. "Cloud Computing: Insights into New-Era Infrastructure", Dr Kumar Sourabh, John Wiley and Sons Publications, 2011.
4. "Cloud Computing: Black Book", Kailash Jayaswal, Jagannath Kallakurchi, Donald J. Houde  Deven Shah, Kogent Learning Solutions, Dreamtech Press.
5. Krutz , Vines, "Cloud Security " , Wiley Pub.
6. "Mastering Cloud Computing", Rajkumar Buyya, C. Vecchiola & S. Thamarai
7. Selvi, McGRAW Hill Publication.

| Subject Name | L | T | P | Credit |
|---|---|---|---|---|
| Enterprise Resource Planning | 3 | 1 | - | 4 |

## Unit-I
Pre History of ERP, Concept of ERP System, Reasons to go for ERP, Need of ERP, Evolution of ERP, Structure of ERP, Concept of Material Requirement Planning (MRP), Manufacturing Resource Planning (MRP II), Common Misconception about ERP, Benefits of ERP, Disadvantages of ERP, ERP and Related Technologies, MIS (Management Information System), DSS (Decision Support System), EIS (Executive Information System), Data Warehouse, Data Mining.

## Unit -II
BPR (Business Process Reengineering), How ERP is related with BPR, Barriers to the Success of BPR; Role and Importance of Data Warehouse in ERP, Role of Data Mining in ERP; Supply Chain Management (SCM), Evolution and Components of SCM, Characteristics of SCM, How ERP is related with SCM; Role and Need of Customer Relationship Management, Integration of ERP, SCM and CRM.

## Unit-III
ERP Modules, Finance, Plant Maintenance, Quality Management, Material Management; Domain of ERP as well as areas affected by ERP e.g. Aerospace, Automobiles etc.; Market Players SAP, JD Edwards, BANN, PeopleSoft, Oracle Etc., ERP market in Indian Context; Assemble-To-Order, Make-To-Order, Make-To-Order, Just in Time (JIT);

## Unit-IV
ERP Implementation Lifecycle, Evaluation Criteria for ERP Product, Integrating ERP into organizational Culture, Critical Factors in the Success and Failure of ERP, ERP Success inhibitors, Return On Investment of ERP Implementation, Useful Guidelines for ERP Implementation, Role of Vendors in ERP Implementation, Evaluation Criteria for Vendors, Role and Need of ERP Consultants, Role of End Users in ERP Implementation, Training of End Users, Motivation for End Users.

## Unit-V
ERP and Internet, ERP and E-Commerce, How ERP interoperate E-Commerce, Future Directions in ERP, New Evolving Markets, Faster Implementation Methodologies, New Business Segments, Concept of Extended ERP, e-ERP, e-CRM, e-SCM, Case Study on SAP, ORACLE, People Soft etc.

**Reference Books:**
1. Alexis Leon, —Enterprise Resource Planning Demystified‖, Tata McGraw-Hill Publishing Company Ltd., New Delhi.
2. Mahadeo Jaiswal and Ganesh Vanapalli, —Text Book of Enterprise Resource Planning‖, Macmillan India Ltd., Chennai.
3. Vinod Kumar Garg and N.K. Venkitakrishnan, —Enterprise Resource Planning–Concepts and Practice‖, Prentice Hall of India, New Delhi.
 4. Rahul V. Altekar —Enterprisewide Resource Planning‖, Tata McGraw Hill.
5. Joseph A Brady, Ellen F Monk, Bret Wagner, —Concepts in Enterprise Resource Planning‖, Thompson Course Technology. 6. Mary Summer, —Enterprise Resource Planning‖, Pearson Education