

**EASWARI ENGINEERING COLLEGE, CHENNAI-600 089**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**LESSON PLAN**

**SUBJECT CODE** : CS6403

**SUBJECT TITLE** : SOFTWARE ENGINEERING

**HOURS DISTRIBUTION** : (L T P C 3 0 0 3)

**COURSE/ BRANCH** : B.Tech (IT)

**SEMESTER** : IV

**ACADEMIC YEAR** : 2014 - 2015

**FACULTY NAME** : Mrs. M. MOHANA / Mrs. S. GNANAPRIYA

**OBJECTIVE OF COURSE:**

- Understand the phases in a software project
- Understand fundamental concepts of requirements engineering and Analysis Modeling.
- Understand the major considerations for enterprise integration and deployment.
- Learn various testing and maintenance measures

**OUTCOME OF COURSE:**

**At the end of the course, the student should be able to**

- Identify the key activities in managing a software project.
- Compare different process models.
- Concepts of requirements engineering and Analysis Modeling.
- Apply systematic procedure for software design and deployment.
- Compare and contrast the various testing and maintenance

**PREREQUISITE** : Student must have a basic knowledge in Data structures and Object oriented programming

UNITS	TOPIC NO	TOPIC	PERIOD	BOOKS REFERRED	PAGE NO
I	<b>UNIT - I (9)</b>				
	<b>SOFTWARE PROCESS AND PROJECT MANAGEMENT</b>				
	<b>OBJECTIVE: To make the students understand the phases in software project and aware of various available process models</b>				
	1	Introduction to Software Engineering	1	T1	03 - 14
	2	Software Process		T1	14 - 17
	3	Perspective Process Models	1	T1	38 - 50

	4	Specialized Process Models	1	T1	50 - 53
	5	Software Project Management	1	T1	646 - 662
	6	Estimation – LOC and FP Based Estimation	1	T1	697 - 703
	7	COCOMO Model	1	R6	hand out
	8	Project Scheduling : - Scheduling	1	R1	626 - 631
	9	Earned Value Analysis	1	T1	739 - 741
	10	Risk Management	1	R1	595 - 602
II	UNIT - II (9)				
	REQUIREMENTS ANALYSIS AND SPECIFICATION				
	OBJECTIVE: To make the students Understand the fundamental concepts of requirements engineering and Analysis Modeling				
	1	Software Requirements: Functional and Non-Functional	1	R1	84 - 91
	2	User requirements	1	R1	82-84
	3	System requirements		R1	
	4	Software Requirements Document	1	R1	91-94
	5	Requirement Engineering Process : Feasibility Studies	1	R1	99-100
	6	Requirements elicitation and analysis	1	R1	100-109
	7	Requirements validation	1	R1	110-111
	8	Requirements management		R1	
	9	Classical analysis: Structured system Analysis	1	handout	
	10	Petri Nets	1	handout	
	11	Data Dictionary	1	handout	
III	UNIT - III (9)				
	SOFTWARE DESIGN				
	OBJECTIVE: To make the students understand the systematic procedure for software design				
	1	Design proces – Design Concepts	1	T1	219 - 232
	2	Design Model	1	T1	233 - 238
	3	Design Heuristic		T1	hand out
	4	Architectural Design – Architectural styles	1	T1	249 - 255
	5	Architectural Design,	1	T1	255 - 261

	6	Architectural Mapping using Data Flow	1		265 - 273
	7	User Interface Design: Interface analysis	1	T1	320 - 328
	8	Interface Design	1	T1	328 - 335
	9	Component level Design: Designing Class based components,	1	T1	282 - 289
	10	Component level Design: Traditional Components.	1	T1	298 - 303
IV	<b>UNIT - IV (9)</b>				
	<b>TESTING AND IMPLEMENTATION</b>				
	<b>OBJECTIVE: To make the students Learn about various testing and maintenance measures</b>				
	1	Software testing fundamentals - Internal and external views of Testing	1	T1	482 - 484
	2	white box testing - basis path testing	1	T1	485 - 492
	3	control structure testing	1	T1	492 - 494
	4	Black box testing	1	T1	495 - 501
	5	Regression Testing	1	T1	462 - 463
	6	Unit Testing – Integration Testing		T1	456 - 462
	7	Validation Testing – System Testing	1	T1	467 - 472
	8	Debugging	1	T1	473 - 478
	9	Software Implementation Techniques: Coding practices	1	hand out	
	10	Refactoring	1	T1	229 - 230
V	<b>UNIT - V (9)</b>				
	<b>PROJECT MANAGEMENT</b>				
	<b>OBJECTIVE: To make the students Understand the major considerations for enterprise integration and deployment</b>				
	1	Estimation – FP Based, LOC Based	1	T1	701 - 703
	2	Make/Buy Decision, COCOMO II	1	T1	709 - 711
	3	Planning – Project Plan, Planning Process,	1	R1	623 - 626
	4	RFP Risk Management – Identification, Projection	1	T1	747 - 754
	5	RMMM	1	T1	755 - 757
	6	Scheduling and Tracking	1	T1	732 - 739
	7	Relationship between people and effort, Task Set & Network,	1	T1	725 - 731

	8	Scheduling	1	T1	724 - 725
	9	EVA			739 - 741
	10	Process and Project Metrics	1	T1	667 - 684

#### **ASSIGNMENT TOPICS**

SL. NO	ASSIGNMENT TOPICS	SUBMISSION DATE
1	From sample SRS documents identify the various functional and non functional user and system requirements	30/01/2015
2	For the given sample source codes write the test cases that can perform exhaustive testing	28/02/2015
3	Use COCOMO II Model to estimate the effort required to build software with the specified functions	27/03/2015

#### **CONTENT BEYOND SYLLABUS**

UNIT No	TOPIC
1	Software process improvement
2	Software Quality Assurance

#### **TEXT BOOK**

1. Roger S. Pressman, "Software Engineering – A Practitioner's Approach", Seventh Edition, Mc Graw- Hill International Edition, 2010

#### **REFERENCES**

1. Ian Sommerville, "Software Engineering", 9th Edition, Pearson Education Asia, 2011.
2. Rajib Mall, "Fundamentals of Software Engineering", Third Edition, PHI Learning Private Limited, 2009.
3. Pankaj Jalote, "Software Engineering, A Precise Approach", Wiley India, 2010.
4. Kelkar S.A., "Software Engineering", Prentice Hall of India Pvt Ltd, 2007.
5. Stephen R.Schach, "Software Engineering", Tata McGraw-Hill Publishing Company Limited, 2007.
6. <http://nptel.ac.in/>.

**FACULTY INCHARGE**

**HOD**

### **Program Educational Outcomes**

1. Graduates will be proficient in utilizing the fundamental knowledge of basic sciences and mathematics to the applications relevant to various streams of Engineering and Technology.
2. Graduates will possess core competencies necessary for application of knowledge of computers and telecommunications equipment to store, retrieve, transmit, manipulate and analyze data in the context of business enterprise.
3. Graduates will be capable of thinking logically, pursue lifelong learning and will have the capacity to understand technical issues related to computing systems and design optimal solutions.
4. Graduates will be able to develop hardware and software systems by understanding the importance of social, business and environmental needs in the human context.
5. Graduates will gain employment in organizations and establish themselves as professionals by applying their technical skills to solve real world problems and meet the diversified needs of industry, academia and research.
6. Graduates will be aware of professional ethics of the software industry and equip themselves with communication skills essential for working in community.

### **Program Outcomes**

- (a) Ability to apply knowledge of computing and mathematics appropriate to Information Technology
- (b) Ability to analyze a problem, and identify computing requirements appropriate to its solution
- (c) Ability to design, implement, and evaluate a system, process, component, or program to meet specific requirements
- (d) Ability to interpret and synthesis data to provide valid conclusions
- (e) Ability to function effectively as a team member to achieve a common goal
- (f) Ability to understand professional, ethical and social issues and responsibilities
- (g) Ability to communicate effectively with a diverse groups
- (h) Ability to analyze the local and global impact of Information Technology on society
- (i) Ability to recognize and engage in continuing professional development and life long learning
- (j) Ability to use current techniques, skills, and tools necessary to accomplish projects related to Information Technology.
- (k) Ability to understand the impact of the professional engineering solutions in societal and environmental contexts for sustainable development.
- (l) Ability to understand engineering and management principles to manage projects in multidisciplinary environment.

Units	Course outcome	PE O1	PE O2	PE O3	PE O4	PE O5	PE O6	P O a	P O b	P O c	P O d	P O e	P Of	P O g	P O h	P O i	P O j	P O k	P O l
To make the students understand the phases in software project and aware of various available process models	At the end of this unit, the student should be able to : compare different process models and able to determine the best model for the given application domain	W	M	S	S	S	W	W	S	W	S	S	M	S	S	S	W	S	W
To make the students understand the fundamental concepts of requirements engineering and Analysis Modeling	At the end of this unit, the student should be able to : apply the Concepts of requirements engineering and Analysis Modeling	W	S	S	S	S	S	W	M	W	S	M	S	S	S	S	W	W	W
To make the students understand the systematic procedure for software design	At the end of this unit, the student should be able to : Apply systematic procedure for software design and	M	S	S	S	S	S	W	M	S	S	S	M	S	S	S	S	S	W

	deployment																		
To make the students Learn about various testing and maintenance measures	At the end of this unit, the student should be able to : Compare and contrast the various testing and maintenance measures	M	M	S	W	S	S	M	S	S	S	S	S	S	S	S	W	W	W
To make the students Understand the major considerations for enterprise integration and deployment	At the end of this unit, the student should be able to : Identify and apply the various key activities in managing a software projects to carry out reliable and economic software development	W	S	S	M	S	S	W	W	W	S	S	S	W	S	W	W	S	

MAPPING OF COURSE OUTCOMES WITH PEO & THE PROGRAMME OUTCOME - SOFTWARE ENGINEERING (CS6403)

STRONG	S
MEDIUM	M
WEAK	W