COURSE HANDOUT

B. Tech (CSE) – 8th Semester

Course Title   : **Object Oriented Software Engineering**   Dated: 27-11-2017

Course Code   : **CSE 4428**   Academic Year : 2017-18

Course Structure   : 3-1-0-4 (L-T-P-C)

Course Coordinator : Mr. D Siva Krishna

Instructor(s)   : Mr. D Siva Krishna, Mr. K Somesh, Mr. K Suresh Kumar

Pre-requisite   : Basics on Software Engineering Concepts

Scope & Course Objectives:

The course content enables students to:

1. Understand about software process models, planning, and estimation of projects.
2. Learn software project development CASE tools using object oriented design concept.
3. Know the projects under the requirement engineering process and use case models.
4. Study and experiment with alternative design models of the software development process.

Course Outcomes: At the end of the course students will be able to:

$C_{CS}422.1$: Relate the object oriented methodology and implementation of software and the management of the software project.

$C_{CS}422.2$: Apply the knowledge of object oriented design tools including use cases, UML, Java and the JDK.

$C_{CS}422.3$: Study and experiment with alternative models of the software development process from the Prototyping method to dynamic modelling.

$C_{CS}422.4$: Practice the principles and techniques by developing a "real world" software system.

$C_{CS}422.5$: Construct by using formal techniques for detailed design in design software projects

$C_{CS}422.5$: Make use of software testing tools to develop object oriented software engineering based projects

Text Books:

1. Object oriented and Classical Software Engineering, 7/e, Stephen R. Schach, TMH
2. Object oriented and classical software Engineering, Timothy Lethbridge, Robert Laganiere, TMH

Reference books:

1. Component-based software engineering: 7thinternational symposium, CBSE 2004, IvicaCrnkovic, Springer
2. Software Testing Tools by Dr KVKK Prasad,dreamtech press

SYLLABUS:

Unit I   **14 Hrs**
Introduction to Classical software Engineering - Historical, Economic and Maintenance aspects.

Introduction to Object Oriented Paradigm, Different phases in structured paradigm and Objective Oriented Paradigm. Software Process and different life cycle models and corresponding strengths and weaknesses.

Planning and Estimation -Estimation of Duration and Cost, COCOMO components of software. Project Management plan.

Unit II   **15 Hrs**

Tools for step wise refinement - Cost - Benefit analysis, Introduction to software metrics and CASE tools. Taxonomy and scope of CASE tools. Introduction to testing, with focus on Utility, Reliability, Robustness, Performance, Correctness.

Modules to objects- Cohesion and Coupling, Data Encapsulation and Information hiding aspects of objects. Inheritance, polymorphism and Dynamic Binding aspects. Cohesion and coupling of objects. Reusability, Portability and Interoperability aspects.

Unit III   **17 Hrs**

Requirement phase - Rapid Prototyping method, Specification phase, Specification Document, Formal methods of developing specification document, Examples of other semi - formal methods of using Finite-State- Machines, Petri nets.

Analysis phase - Use case Modeling, Class Modeling, Dynamic Modeling.

UNIT-IV   **14 Hrs**

Design phase - Formal techniques for detailed design.

IIM Phases - Implementation, Integration and maintenance phases.

Software Testing Tools: selenium, QTP, Winrunner, Silktest, LoadRunner.

Course Plan:

Lecture No.	Learning Objectives	Topic(s) to be Covered	Chapter in the Textbook/Reference
		Unit-1	
1.	Understand about Historical aspects of	Historical aspects	T1
2.	Understand about Economic aspects	Economic aspects	T1
3.	Understand about Maintenance aspects	Maintenance aspects	T1
4.	**Tutorial No. 1**		
5.	Explain the Object Oriented Paradigm Introduction to Object Oriented Paradigm	Introduction to Object Oriented Paradigm	T1
6.	Explain the different phases in structured paradigm	Different phases in structured paradigm	T1
7.	Explain the different phases in Objective Oriented Paradigm	Different phases in Objective Oriented Paradigm	T1
8.	**Tutorial No. 2**		
9.	Understand about software process models	Software Process	T1

10.	Explain the different life cycle models with strengths and weaknesses	different life cycle models with strengths and weaknesses	T1
11.		different life cycle models with strengths and weaknesses cont.	T1
12.	**Tutorial No. 3**		
13.	Understand and apply the process of Estimation of Duration and Cost of a project	Estimation of Duration and Cost	T1
14.		COCOMO components of software	T1
15.	Plan a project w.r.t schedule and Duration	Project Management plan	T1
16.	**Tutorial No. 4**		
	Unit-2		
17.	Explain the utility of Cost – Benefit Analysis	Cost - Benefit analysis	T1
18.	Use the CASE Tools for step wise refinements in Software projects	Introduction to software metrics and CASE tools	T1
19.		Introduction to software metrics and CASE Tools cont.	T1
20.		Taxonomy and scope of CASE tools	T1
21.	**Tutorial-5**		
22.	Test the software projects on Utility, Reliability, Robustness, Performance, Correctness	Introduction to testing (Utility, Reliability, Robustness, Performance, Correctness)	T1
23.		Introduction to testing (Utility, Reliability, Robustness, Performance, Correctness) cont.	T1
24.	**Tutorial-6**		
25.	Explain the features of using Cohesion and Coupling used in software	Cohesion and Coupling	T1
26.	Explain the features of using Data Encapsulation and Information hiding used in object oriented software engineering	Data Encapsulation and Information hiding aspects of objects	T1
27.		Inheritance, polymorphism and Dynamic Binding aspects	T1
28.	**Tutorial-7**		
29.	Explain the features of using Cohesion and Coupling used in object oriented	Cohesion and coupling of objects	T1
30.	Explain the features of using Reusability, Portability and Interoperability aspects used in object oriented software engineering	Reusability, Portability and Interoperability aspects	T1
31.	**Tutorial-8**		
	UNIT-3		T2
32.	Understand and apply to software projects about Requirement phase	Rapid Prototyping method	T2
33.	Understand and apply to software projects about Requirement phase	Specification phase	T2

34.	Understand and apply to software projects about Requirement phase	Specification Document	T2
35.	**Tutorial-9**		
36.		Formal methods of developing specification Document	T2
37.	Explain the different Formal methods of developing specification document	Examples of other semi - formal methods of using Finite-State-Machines	T2
38.		Petri net	T2
39.	**Tutorial-10**		
40.	Analyze different models used to develop software projects in analysis phase	Use case Modelling	T2
41.		Use case Modelling cont.	T2
42.	Analyze different models used to develop software projects in analysis phase	Class Modelling	T2
43.		Class Modelling cont.	T2
44.	Analyze different models used to develop software projects in analysis phase	Dynamic Modelling	T2
45.		Dynamic Modelling cont.	T2
46.	**Tutorial-11**		
47.	**Tutorial-12**		
	UNIT – IV		
48.	Understand the Formal techniques for detailed design in design phase	**Design phase** - Formal techniques for detailed design.	T2
49.	Understand the Formal techniques for detailed design in design phase	**Design phase** - Formal techniques for detailed design.	T2
50.	Understand the Formal techniques for detailed design in design phase	**Design phase** - Formal techniques for detailed design.	T2
51.	**Tutorial-13**		
52.	Explain Implementation, Integration and maintenance phases	**IIM Phases** – Implementation phase	T2
53.	Explain Implementation, Integration and maintenance phases	**IIM Phases** – Implementation phase cont.	T2
54.	Explain Implementation, Integration and maintenance phases	**IIM Phases** – Integration phase	T2
55.	Explain Implementation, Integration and maintenance phases	**IIM Phases** – Integration phase cont.	T2
56.	Explain Implementation, Integration and maintenance phases	**IIM Phases** – Maintenance phase	T2
57.	**Tutorial-14**		
58.	Use Software Testing Tools to develop	Software Testing Tools: selenium,	T2

		QTP, Winrunner, Silktest, LoadRunner	
59.	Use Software Testing Tools to develop OOSE projects	Software Testing Tools: Winrunner, Silktest, LoadRunner	T2
60.	**Tutorial-15**		

Evaluation Scheme:

Component	Duration (minutes)	Marks	% of weightage	Date & Time	Venue
Sessional Test – 1	90	20	20%	01.01.2018 to 06.01.2018	Block-5
Sessional Test – 2	90	20	(Average of	12.02.2018 to 17.02.2018	Block-5
Sessional Test – 3	90	20	Best Two)	02.04.2018 to 07.04.2018	Block-5
Comprehensive Quiz Examination	20	10	10%	02.04.2018 to 07.04.2018	Programming Lab
Semester End Exam	**180**	**70**	**70%**	09.04.2018 to 24.14.2018	Block-5

Chamber Consultation Hour: 4.00PM

Venue : CSE Staff Room

Notices: CSE Main Notice Board

                           Mr. D SIVA KRISHNA

Signatures of the Instructors   **Signature of the Course-Coordinator**