

Fr. Conceicao Rodrigues College Of Engineering
Department of Artificial Intelligence and Data Science Engineering

T.E. (AI DS) (semester VI) (2022-2023)
Course Outcomes & Assessment Plan

Subject: Software Engineering and Project Management(DBMS-CSC403)
Credits-3

Course Objectives:

- 1 To provide the knowledge of software engineering discipline.
- 2 To understand Requirements and analyze it
- 3 To do planning and apply scheduling
- 4 To apply analysis, and develop software solutions
- 5 To demonstrate and evaluate real time projects with respect to software engineering principles and Apply testing and assure quality in software solution.
- 6 To understand need of project management and project management life cycle.

Teaching Scheme

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical/Oral	Tut	Credits
CSC603	Software Engineering and Project Management	03	--	--	03	--	---	03
CSL603	Software Engineering and Project Management Lab	--	02	--	--	--	--	01

Examination Scheme

Course Code	Course Name	Theory Marks			Term Work	Practical & Oral	Total
		Internal Assessment					

		Test1	Test2	Avg	End Sem Exam			
CSC603	Software Engineering and Project Management	20	20	20	80 (3hr)	---	---	100
CSL603	Software Engineering and Project Management Lab					25	---	25

Syllabus: Prerequisite: None

1 Introduction to Software Engineering (08)

Nature of Software, Software Engineering, Software Process, Capability Maturity Model (CMM) Generic Process Model, Prescriptive Process Models: The Waterfall Model, V-model, Incremental Process Models, Evolutionary Process Models, Concurrent Models, Agile process, Agility Principles, Extreme Programming (XP), Scrum, Kanban model

2 Requirements Analysis and Cost Estimation (06)

Software Requirements: Functional & non-functional – user-system requirement engineering process – feasibility studies – elicitation – validation & management – software prototyping – S/W documentation – Analysis and modelling Requirement Elicitation, Software requirement specification (SRS) 3Ps (people, product and process) Process and Project metrics Software Project Estimation: LOC, FP, Empirical Estimation Models - COCOMO II Model

3 Design Engineering (07)

Design Process & quality, Design Concepts, The design Model, Pattern-based Software Design. 4.2 Architectural Design :Design Decisions, Views, Patterns, Application Architectures, Modeling Component level Design: component, Designing class based components, conducting component-level design, User Interface Design: The golden rules, Interface Design steps & Analysis, Design Evaluation

4 Software Risk, Configuration Management (05)

Risk Identification, Risk Assessment, Risk Projection, RMMM Software Configuration management, SCM repositories, SCM process Software Quality Assurance Task and Plan, Metrics, Software Reliability, Formal Technical Review (FTR), Walkthrough.

5 Software Testing and Maintenance (05)

Testing: Software Quality, Testing: Strategic Approach, Strategic Issues Testing: Strategies for Conventional Software, Object oriented software, Web Apps Validating Testing- System Testing- Art of Debugging. Maintenance : Software Maintenance-Software Supportability Reengineering- Business Process Reengineering- Software Reengineering Reverse Engineering- Restructuring- Forward Engineering.

6. IT Project Management and Project Scheduling (08)

Introduction, 4 P's, W5HH Principle, Need for Project Management, Project Life cycle and ITPM, Project Feasibility, RFP, PMBOK Knowledge areas, Business Case, Project Planning, Project Charter and Project Scope. 6.2 Project Scheduling: Defining a Task Set for the Software Project, Timeline charts WBS, Developing the Project Schedule, Network Diagrams (AON, AOA), CPM and PERT, Gantt Chart , Tracking the Schedule, Earned Value Analysis

Internal Assessment:

Assessment consists of two class tests of 20 marks each. The first-class test is to be conducted when approx. 40% syllabus is completed and second class test when additional 40% syllabus is completed. Duration of each test shall be one hour.

Lecture Plan : SEM VI-SEPM-CSC603**Modes of Content Delivery:**

i	Class Room Teaching	v	Self-Learning Online Resources	ix	Industry Visit
ii	Tutorial	vi	Slides	x	Group Discussion
iii	Remedial Coaching	vii	Simulations/Demonstrations	xi	Seminar
iv	Lab Experiment	viii	Expert Lecture	xii	Case Study

Term : 09th Jan – 22 Apr 2023**(UT1 : 27 Feb - 2 Mar) (UT2 : 17Apr -20 Apr)**

No.	Portion to be covered	Planned date	Actual date	Content Delivery - Reference /Assessment Method
1	Introduction Syllabus. Introduction to Software Engineering and Project Management	10/1/23		PPT, white board and marker UT1 and Assign
2	Nature of Software, Software Engineering, Software Process	11/1/23		PPT, white board and marker UT1 and Assign
3	Capability Maturity Model (CMM) Generic Process Model, Prescriptive Process Models: The Waterfall Model	13/1/23		PPT, white board and marker UT1 and Assign
4	V-model, Incremental Process Models,	17/1/23		PPT, white board and marker UT1 and Assign
5	Evolutionary Process Models, Concurrent Models	18/1/23		PPT, white board and marker UT1 and Assign
6	Scrum, Kanban model	20/1/23		PPT, white board and marker UT1 and Assign
7	Software Requirements: Functional & non-functional	24/1/23		PPT, white board and marker UT1 and Assign
8	user-system requirement engineering process – feasibility studies – elicitation – validation & management	27/1/23		PPT, white board and marker UT1 and Assign
9	software prototyping – S/W documentation – Analysis and modelling Requirement Elicitation	31/1/23		PPT, white board and marker UT1 and Assign
10	Software requirement specification (SRS)	2/2/23		PPT, white board and marker UT1 and Assign
11	3Ps (people, product and process) Process and Project metrics Software Project Estimation: LOC,	3/2/23		PPT, white board and marker UT1 and Assign
12	FP, Empirical Estimation Models - COCOMO II Model	4/2/23		PPT, white board and marker UT1 and Assign
13	Design Process & quality, Design Concepts, 4.2,	7/2/23		PPT, white board and marker UT1 and Assign
14	The design Model, Pattern-based Software Design.	9/2/23		PPT, white board and marker UT1 and Assign
15	Architectural Design :Design Decisions, Views, Patterns,	10/2/23		PPT, white board and marker UT1 and Assign
16	Architectural Design :Design Decisions, Views, Patterns,	14/2/23		PPT, white board and marker UT1 and Assign

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17	Application Architectures, Modeling Component level Design: component, Designing class based components, conducting component-level design	16/2/23		PPT, white board and marker UT1 and Assign
18	User Interface Design: The golden rules, Interface Design steps	17/2/23		PPT, white board and marker UT1 and Assign
19	Analysis, Design Evaluation	21/2/23		PPT, white board and marker UT2 and Assign
20	Risk Identification, Risk Assessment, , Formal Technical	23/2/23		PPT, white board and marker UT2 and Assign
21	Risk Projection, RMMM Software Configuration management	24/2/23		PPT, white board and marker UT2 and Assign
22	SCM repositories, SCM process Software Quality Assurance Task and Plan	2/3/23		PPT, white board and marker UT2 and Assign
23	Metrics, Software Reliability,	3/3/23		PPT, white board and marker UT2 and Assign
24	Review (FTR), Walkthrough.	4/3/23		PPT, white board and marker UT2 and Assign
25	Testing: Software Quality, Testing: Strategic Approach	9/3/23		PPT, white board and marker UT2 and Assign
26	Strategic Issues Testing: Strategies for Conventional Software,	10/3/23		PPT, white board and marker UT2 and Assign
27	Validating Testing- System Testing- Art of Debugging.	14/3/23		PPT, white board and marker UT2 and Assign
28	Maintenance : Software Maintenance-Software Supportability	16/3/23		PPT, white board and marker UT2 and Assign
29	Reengineering- Business Process Reengineering-	17/3/23		PPT, white board and marker UT2 and Assign
30	Restructuring- Forward Engineering.	18/3/23		PPT, white board and marker UT2 and Assign
31	Introduction, 4 P',and charts WBS,	21/3/23		PPT, white board and marker UT2 and Assign
32	W5HH Principle, Need for Project Management,	23/3/23		PPT, white board and marker UT2 and Assign
33	Project Life cycle and ITPM,	24/3/23		PPT, white board and marker UT2 and Assign
34	Project Feasibility, RFP, PMBOK Knowledge areas	28/3/23		PPT, white board and marker UT2 and Assign
35	Business Case,	31/3/23		PPT, white board and marker UT2 and Assign
36	Project Planning, Project Charter	01/4/23		PPT, white board and marker UT2 and Assign
37	Project Scope. 6.2 Project Scheduling: Defining a Task Set for the Software Project, Timeline	06/4/23		PPT, white board and marker UT2 and Assign
38	Developing the Project Schedule, Network Diagrams (AON, AOA), CPM and PERT, Gantt Chart ,	11/4/23		PPT, white board and marker UT2 and Assign
39	Tracking the Schedule, Earned Value Analysis	13/4/23		PPT, white board and marker UT2 and Assign

40	Problems on AOA, PERT CPM	15/4/23		PPT, white board and marker UT2 and Assign
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Total Lectures : 40

Text Books:

- 1 Roger S. Pressman, Software Engineering: A practitioner's approach, McGraw Hill
- 2 Rajib Mall, Fundamentals of Software Engineering, Prentice Hall India
- 3 John M. Nicholas, Project Management for Business and Technology, 3rd edition, Pearson Education.

References books:

1. Software Engineering : A Precise Approach|| Pankaj Jalote , Wiley India
2. Ian Sommerville — Software Engineering|| 9th edition Pearson Education SBN-13: 978-0- 13- 703515-1, ISBN-10: 0-13-703515-2
3. PankajJalote, An integrated approach to Software Engineering, Springer/Narosa.

Web Resources:

- 1 https://onlinecourses.swayam2.ac.in/cec21_cs21/preview
- 2 <https://nptel.ac.in/courses/106101061>
- 3 <http://www.nptelvideos.com/video.php?id=911&c=94>

Course Outcomes: [Target 2.5]

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

- CSC603.1 : Understand and use basic knowledge in software engineering
 CSC603.2 : Identify requirements, analyze and prepare models.
 CSC603.3 : Plan, schedule and track the progress of the projects.
 CSC603.4 : Design & develop the software solutions for the growth of society
 CSC603.5 : Apply testing and assure quality in software solutions
 CSC603.6 : Generate project schedule and can construct, design and develop network diagram for different type of Projects. They can also organize different activities of project

Mapping of CO and PO/PSO

Relationship of course outcomes with program outcomes: Indicate 1 (low importance), 2 (Moderate Importance) or 3 (High Importance) in respective mapping cell.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CSC603.1	3									3			3
CSC603.2	3	3	3	3		2			3	3		2	3
CSC603.3	3	3	3	3	2				3	3	3	2	3
CSC603.4	3	3	3	3	2				3	3	3	2	3
CSC603.5	3	3	3	2	2				3	3	3	2	3
CSC603.6	3	3	3	3	2				3	3	3	2	3
TOTAL	18	15	15	14	08	02			15	18	12	10	18

CO-PO MATRIX	3	3	3	2.8	2	2			3	3	3	2		3
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CO ASSESSMENT TOOLS

		Indirect Methods (20%)		
CSC603.1	Test 1 (40%)	Assign 1 (40%)	UE -TH (20%)	(100%)
CSC603.2	Test1 (40%)	Assign 1 (40%)	UE -TH (20%)	(100%)
CSC603.3	Test1 (40%)	Assign 1 (40%)	UE -TH (20%)	(100%)
CSC603.4	Test2 (40%)	Assign 2 (40%)	UE -TH (10%)	(100%)
CSC603.5	Test2 (40%)	Assign 2 (40%)	UE -TH (20%)	(100%)
CSC603.6	Test2 (40%)	Assign 2 (40%)	UE -TH (20%)	(100%)

Gurriculum Gap/Content Beyond Syllabus:

Sr. No.	Gap/Content Beyond Syllabus	Activity	Topic
1	Industry insights- Software Development	Guest lecture	Software Development process in software Industries
2			

Rubrics for Assignments**Class : T.E. AI & DS****Semester : VI**

Assignment No:	
Title:	
Date of Performance:	
Roll No:	
Name of the Student:	

Evaluation:

Indicator	Poor	Average	Good
Timeliness <ul style="list-style-type: none"> Maintains assignment deadline (2) 	Assignment not done (0)	One or More than One week late (1)	Maintains deadline (2)
Completeness and neatness <ul style="list-style-type: none"> Complete all parts of assignment(3) 	N/A	< 80% complete (1-2)	100% complete (3)
Originality <ul style="list-style-type: none"> Extent of plagiarism(2) 	Copied it from someone else(0)	Atleast few questions have been done without copying(1)	Assignment has been solved completely without copying (2)
Knowledge <ul style="list-style-type: none"> In depth knowledge of the assignment(3) 	Unable to answer all questions(0)	Unable to answer some questions (1 or 2)	Able to answer all questions (3)