Department of Information Technology	LP: IT22409 Rev. No: 00 Date: 22.01.24
~~B.E~~/**B.Tech**/~~M.E/M.Tech~~ : Information Technology Regulation:2022 PG Specialisation : NA Sub. Code / Sub. Name : IT22409 / Software Engineering Methodologies: Theory and Practices Unit : I	

Unit Syllabus: SOFTWARE PROCESS AND SOFTWARE REQUIREMENT ANALYSIS 6+4

Generic process model, Prescriptive Process models, Software Requirements: Functional and Non-Functional, User requirements, System requirements, Software Requirements Document – Requirement Engineering Process.

Suggested Activity (not limited to)

1. Identify a software system that needs to be developed.
2. Document the Software Requirements Specification (SRS) for the Identified system.

Objective: To know about the basic concepts of software **engineering, Process life cycle models**, Requirements Engineering and analysis activity.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Introduction, Generic process model	3-Ch. 1 (Pg. 1-12) 3-Ch. 2 (Pg. 31-34)	PPT
2	Prescriptive Process models	3-Ch. 4 (Pg. 38-49)	PPT/PL
3	Software Requirements: Functional and Non-Functional	1-Ch. 4 (Pg. 101-111)	PPT
4	User requirements, System requirements	1-Ch. 4 (Pg. 112-126)	PPT/EL
5	Software Requirements Document	1-Ch. 4 (Pg. 126-130)	PPT/PL
6	Requirement Engineering Process	1-Ch. 4 (Pg. 112-126)	PPT/EL
7	Identify a software system that needs to be developed	Internet	PPT/BB
8	Identify a software system that needs to be developed	Internet	PPT/BB
9	Document the Software Requirements Specification (SRS) for the Identified system.	1-Ch. 4 (Pg. 126-130)	PPT/PPS
10	Document the Software Requirements Specification (SRS) for the Identified system.	1-Ch. 4 (Pg. 126-130)	PPT/PPS
Content beyond syllabus covered (if any):			

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Unit : II

Unit Syllabus: SOFTWARE DESIGN **6+9**

System Modeling - Context models, Interaction models, Structural models, Behavioral models, Model driven engineering, - context diagram, class diagram, sequence diagram, interaction diagram, communication diagram, state chart diagram.

Suggested Activity (not limited to)

1.Identify use cases and develop the Use Case model.
2. Identify the conceptual classes and develop a Domain Model and also derive a Class Diagram from that.
3. Using the identified scenarios, find the interaction between objects and represent them using UML Sequence and Collaboration Diagrams.
4. Draw relevant State Chart and Activity Diagrams for the same system.

Objective: To learn about different types of design models

Session No *	Topics to be covered	Ref	Teaching Aids
11	System Modeling - Context models, Interaction models, Structural models, Behavioral models, Model driven engineering	1-Ch. 5 (Pg. 138-162)	PPT/BB
12	context diagram	1-Ch. 5 (Pg. 141-144)	PPT/PPS
13	class diagram	1-Ch. 5 (Pg. 149-154)	PPT/PPS
14	sequence diagram	1-Ch. 5 (Pg. 154-158)	PPT/PPS
15	interaction diagram	1-Ch. 5 (Pg. 144-148)	PPT/PPS
16	communication diagram, state chart diagram	1-Ch. 5 (Pg. 156-158)	PPT/PPS
17	Identify use cases and develop the Use Case model	1-Ch. 5 (Pg. 144-148)	PPT/PPS
18	Identify use cases and develop the Use Case model	1-Ch. 5 (Pg. 144-148)	PPT/PPS
19	Identify the conceptual classes and develop a Domain Model and also derive a Class Diagram from that	1-Ch. 5 (Pg. 149-154)	PPT/BB
20	Identify the conceptual classes and develop a Domain Model and also derive a Class Diagram from that	1-Ch. 5 (Pg. 149-154)	BB/EL
21	Using the identified scenarios, find the interaction between objects and represent them using UML Sequence and Collaboration Diagrams	1-Ch. 5 (Pg. 144-148)	BB/EL
22	Using the identified scenarios, find the interaction between objects and represent them using UML Sequence and Collaboration Diagrams	1-Ch. 5 (Pg. 144-148)	BB/EL
23	Using the identified scenarios, find the interaction between objects and represent them using UML Sequence and Collaboration Diagrams	1-Ch. 5 (Pg. 144-148)	BB/EL
24	Draw relevant State Chart and Activity Diagrams for the same system	1-Ch. 5 (Pg. 154-158)	BB/EL
25	Draw relevant State Chart and Activity Diagrams for the same system	1-Ch. 5 (Pg. 154-158)	BB/EL

Content beyond syllabus covered (if any):-Demo on ArgoUML.

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Unit : III

Unit Syllabus: ARCHITECTURAL DESIGN **6+9**

Introduction - Architectural views-Architectural patterns-Application architecture- Data processing systems, Transaction processing systems, Event processing systems, Language processing systems, User Interface Design: Interface analysis, Interface Design. Testing throughout the Software Life Cycle.

Suggested Activity (not limited to)

1. Implement the system as per the detailed design
2. Test the software system for all the scenarios identified as per the use case diagram

Objective: To learn about the architecture design, design decisions, views, patterns, architecture and software testing.

Session No	Topics to be covered	Ref	Teaching Aids
26	Introduction - Architectural views-Architectural patterns-Application architecture	1-Ch. 6 (Pg. 167-177)	PPT/BB
27	Data processing systems, Transaction processing systems, Event processing systems, Language processing systems	1-Ch. 6 (Pg. 177-191)	PPT/BB
28	User Interface Design: Interface analysis	4-Ch. 11 (Pg. 313-321)	PPT/BB
29	Interface Design	4-Ch. 11 (Pg. 328-331)	PPT/BB
30	Testing throughout the Software Life Cycle	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013501583641542656119 51/overview	PPT/BB
31	Testing throughout the Software Life Cycle	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013501583641542656119 51/overview	PPT/BB
32	Implement the system as per the detailed design	Eclipse JEE Version	PPT/EL
33	Implement the system as per the detailed design		PPT/EL
34	Implement the system as per the detailed design		PPT/EL
35	Implement the system as per the detailed design		PPT/EL
36	Implement the system as per the detailed design		PPT/EL
37	Implement the system as per the detailed design		PPT/EL
38	Implement the system as per the detailed design		PPT/EL
39	Test the software system for all the scenarios identified as per the use case diagram		PPT/EL
40	Test the software system for all the scenarios identified as per the use case diagram		PPT/EL

Content beyond syllabus covered (if any):

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Unit : IV

Unit Syllabus: AGILE PRODUCT MANAGEMENT WITH SCRUM **6+4**

Agile methods - Agile development techniques - Agile project management - Scaling agile methods. Understanding product owner role - Working with product backlog - Planning the release, Agile model driven development (AMDD)

Suggested Activity

Demo on Kanban

Objective: To learn about agile methods and techniques' agile product management in detail.

Session No *	Topics to be covered	Ref	Teaching Aids
41	Agile methods, Agile development techniques	1-Ch. 3 (Pg. 72-83)	PPT/BB
42	Agile project management, Scaling agile methods	1-Ch. 3 (Pg. 83-89)	PPT/BB
43	Understanding product owner role	2-Ch. 1 (Pg. 1 -20)	PPT/BB
44	Working with product backlog	2-Ch. 1 (Pg. 1 -12)	PPT/BB
45	Planning the release	2-Ch. 4 (Pg. 75-96)	PPT/BB
46	Agile model driven development (AMDD)	1-Ch.3 (Pg. 90-95)	PPT/BB
47	Demo on Kanban	https://www.atlassian.com/agile/kanban/boards#:~:text	PPT/EL
48	Demo on Kanban	https://www.atlassian.com/agile/kanban/boards#:~:text	PPT/EL
49	Demo on Kanban	https://www.atlassian.com/agile/kanban/boards#:~:text	PPT/EL
50	Demo on Kanban	https://www.atlassian.com/agile/kanban/boards#:~:text	PPT/EL

Content beyond syllabus covered (if any): Guest lecture on scrum and agile methods and development.

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Unit : V

Unit Syllabus: ADVANCED SOFTWARE ENGINEERING **6+4**

Software Reuse –benefits, problems, model view controller, COTS product reuse, Distributed Software engineering - Architectural patterns for distributed systems, Software as a service, Performance engineering.

Suggested Activity (not limited to)

1. Improve the reusability and maintainability of the software system by applying appropriate design patterns.
2. Implement the modified system and test it for various scenarios

Objective: To be exposed to advanced software engineering techniques

Session No *	Topics to be covered	Ref	Teaching Aids
51	Software Reuse –benefits, problems	1 -Ch. 15 (Pg. 437 - 441)	PPT/PL
52	Model view controller	1-Ch.15 (Pg. 447-453)	PPT/PL
53	COTS product reuse	1-Ch.15 (Pg. 447-453)	PPT/PL
54	Distributed Software engineering	1-Ch.17 (Pg. 490-499)	PPT/PL
55	Architectural patterns for distributed systems	1-Ch.17 (Pg. 501-511)	PPT/PL
56	Software as a service	1-Ch.17 (Pg. 512-519)	PPT/PL
57	Software as a service	1-Ch.17 (Pg. 512-519)	PPT/PL
58	Performance engineering	Internet	PPT/BB
59	Performance engineering	Internet	PPT/BB
60	Performance engineering	Internet	PPT/BB

Content beyond syllabus covered (if any): -Demo on Object Oriented Software Reuse Tool(ORT)

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub Code / Sub Name: **IT22409 / Software Engineering Methodologies: Theory and Practices**

REFERENCES:

1. Ian Sommerville, "Software Engineering", 10th Edition, Pearson Education Asia.
2. Roman Pichler, "Agile Product Management with Scrum Creating Products that Customers Love", Pearson Education.
3. Roger S. Pressman and Bruce Maxim, "Software Engineering – A Practitioner"s Approach", Ninth Edition, Mc Graw-Hill International Edition.
4. Ken Schwaber , "Agile Project Management with Scrum" , Microsoft Press.
5. Tilak Mitra, "Practical Software Architecture: Moving from System Context to Deployment", IBM press

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Date	22.1.24	22.1.24
Remarks *:		
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD

It is decided to follow the same lesson plan for the academic year 2024-25.

20/1/25

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