COURSE INSTRUCTOR NAME: Mr. M A MUJEEB ACADEMIC YEAR:2023-24

SUBJECT NAME:SOFTWARE ENGINEERING

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SEM START DATE AND END DATE: 19.02.24 T0 29.06.24

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HOD

1. DEPARTMENT VISION & MISSION

Vision:

To produce globally competent and industry-ready graduates in Computer Science & Engineering by imparting quality education with the know-how of cutting-edge technology and holistic personality.

Mission:

1. To offer high-quality education in Computer Science & Engineering in order to build core competence for the graduates by laying a solid foundation in Applied Mathematics and program framework with a focus on concept building.

2. The department promotes excellence in teaching, research, and collaborative activities to prepare graduates for a professional career or higher studies.

3. Creating an intellectual environment for developing logical skills and problem-solving strategies, thus developing, an able and proficient computer engineer to compete in the current global scenario.

2. LIST OF PEOs, POs AND PSOs

2.1 Program Educational Objectives (PEO):

PEO 1: Excel in professional career and higher education by acquiring knowledge of mathematical computing and engineering principles.

PEO 2: To provide an intellectual environment for analyzing and designing computing systems for technical needs.

PEO 3: Exhibit professionalism to adapt current trends using lifelong learning with legal and ethical responsibilities.

PEO 4: To produce responsible graduates with effective communication skills and multidisciplinary practices to serve society and preserve the environment.

2.2. Program Outcomes (POs):

Engineering Graduates will be able to satisfy these NBA graduate attributes:

* **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

* **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

* **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

* **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

* **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

* **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities

relevant to the professional engineering practice.

* **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

* **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

* **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

* **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

* **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

* **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

2.3 Program Specific Outcomes (PSOs):

PSO1: Professional Skills and Foundations of Software development: Ability to analyze,

design and develop applications by adopting the dynamic nature of Software developments.

PSO2: Applications of Computing and Research Ability: Ability to use knowledge in cutting edge technologies in identifying research gaps and to render solutions with innovative ideas.

PO1 Engineering knowledge

PO2 Problem analysis

PO3 Design/development of solutions

PO4 Conduct investigations of complex problems

PO5 Modern tool usage

PO6 The engineer and society

PO7 Environment and sustainability

PO8 Ethics

PO9 Individual and team work

PO10 Communication

PO11 Project management and finance

PO12 Life-long learning

3. COURSE OUTCOMES

CO's	Description
CO1	**Illustrate** the software process models and software engineering process.**[Understanding]**
CO2	**Apply**end-userrequirementsintosystemandsoftwarerequirements,usinge.g.UML,andstructuretherequirementsina SoftwareRequirementsDocument(SRD).**[Applying]**
CO3	**Identify**and**apply**appropriatesoftwarearchitecturesandpatternstocarryouthighleveldesignofa systemand beableto critically compare alternativechoices.**[Applying]**
CO4	**Analyze** types of testingproblemsanddevelopasimpletestingreport.**[Analyzing]**
CO5	**Evaluate** metrics for process product and Risk Management use quality assurance tools and techniques.**[Evaluating]**

* **Syllabus copy**

UNIT-I

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, legacy software, Software myths.

A Generic view of process: Software engineering- a layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Process models: The waterfall model, Incremental process models, Evolutionary process models, specialized process models, The Unified process

UNIT-II

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT-III

Design Engineering: Design process and Design quality, Design concepts, the design model, pattern based software design.

Creating an architectural design: Software architecture, Data design, architectural styles and patterns, Architectural Design, assessing alternative architectural designs, mapping data flow into a software architecture.

Modeling component-level design: Designing class-based components, conducting component-level design.Object constraint language, designing conventional components.

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT-IV

Testing Strategies:A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

Product metrics: Software Quality, Frame work for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Metrics for Process and Products: Software Measurement, Metrics for software quality.

UNIT-V

Risk management: Reactive vs Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk projection, Risk refinement, RMMM, RMMM Plan

Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

Suggested Books

TEXT BOOKS

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6 thedition, Mc Graw Hill International Edition.

2. Software Engineering- Sommerville, 7 th edition, Pearson Education.

3. The unified modeling language user guide Grady Booch, James Rambaugh, Ivar Jacobson, Pearson Education.

REFERENCE BOOKS:

1. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz,John Wiley.

2. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.

3. Fundamentals of object-oriented design using UML Meiler page-Jones: Pearson

5.INDIVIDUAL TIME TABLE(M A MUJEEB)

	I	II	III	IV	LUNCH BREAK	V	VI	VII
MON		SE						
TUE			SE					
WED								SE
THU	SE					SE		

FRI								
SAT	SE							SE

6. SESSION PLAN/LESSON PLAN

	Topic (JNTUH syllabus)	**Sub-Topic**	**PLANNED DATE**	**CONDUCTEDDATE**	**Rema**
	UNIT-I	Evolving Role of Software	20.02.2024	20.02.2024	

	Introduction to Software Engineering & Generic view of process, Process models				
		Changing nature of software	21.02.2024	21.02.2024	
		Software myths	24.02.2024	24.02.2024	
		A Generic view of process: Software engineering- a layered technology	24.02.2024	24.02.2024	
		A process framework	27.02.2024	27.02.2024	
		The Capability Maturity Model Integration (CMMI)	28.02.2024	28.02.2024	
		Process Patterns. Process Assessments	28.02.2024	28.02.2024	
		Personal and team process models	02.03.2024	02.03.2024	
		Water fall model.	02.03.2024	02.03.2024	
		Incremental Process model	05.03.2024	05.03.2024	
		Evolutionary Process models.	06.03.2024	06.03.2024	
		Specialized process models	09.03.2024	09.03.2024	
		Unified Process model	09.03.2024	09.03.2024	
	UNIT-II & Software Requirements, Requirements engineering process & System models	Functional and non-Functional Requirements	12.03.2024	12.03.2024	

		User's requirements, System requirements	13.03.2024	13.03.2024	
		Interface specification	16.03.2024	16.03.2024	
		the software requirements document	16.03.2024	16.03.2024	
		Feasibility Study	19.03.2024	18.03.2024	
		Requirements elicitation and Analysis	20.03.2024	19.03.2024	
		Requirements validation, Requirements management	23.03.2024	20.03.2024	
		Context models, Behavioral model	23.03.2024	23.03.2024	
		Date model, object model	26.03.2024	23.03.2024	
		Structured models	27.03.2024	26.03.2024	
	UNIT-III Design Engineering & Creating an architectural design Modeling component-level design	Design Engineering and Design Process	30.03.2024	30.03.2024	
		Design concepts	30.03.2024	30.03.2024	
		Design model	02.04.2024	01.04.2024	
		Pattern based software design	02.04.2024	02.04.2024	
		Architecture software: Data Design	03.04.2024	03.04.2024	
		Architectural styles and pattern	06.04.2024	06.04.2024	
		Architectural Design	06.04.2024	10.04.2024	

		Mapping data flow into a software architecture.	10.04.2024	13.04.2024	
		Designing class-based components	23.04.2024	23.04.2024	
		conducting component-level design	24.04.2024	24.04.2024	
		conducting component-level design	27.04.2024	27.04.2024	
		designing conventional components	27.04.2024	27.04.2024	
		Performing user Interface Design	30.04.2024	30.04.2024	
		User Design Process, Interface analysis,	30.04.2024	30.04.2024	
		interface design steps, Design evaluation	01.05.2024	01.05.2024	
	UNIT-IV **Testing Strategies& Product metricsMetrics for Process and Products**	Strategic approach to software testing	04.05.2024	04.05.2024	
		Testing strategy for conventional software	04.05.2024	04.05.2024	
		Block box Testing	07.05.2024	07.05.2024	
		Write box Testing	08.05.2024	08.05.2024	
		Validation testing, The art of debugging	09.05.2024	09.05.2024	
		Software Quality, Frame work for Product metrics	10.05.2024	10.05.2024	
		Metrics for Analysis Model, Metrics for Design Model	28.05.2024	28.05.2024	
		Metrics for source code, Metrics for testing	29.05.2024	29.05.2024	
		Metrics for maintenance	01.06.2024	01.06.2024	
		Metrics for Process and Products:Software Measurement	03.06.2024	03.06.2024	

		Metrics for Software quality	04.06.2024	04.06.2024	
	UNIT-V **Risk Management** **Quality management**	Risk Management: Introduction	05.06.2024	05.06.2024	
		software risks, Risk identification	08.06.2024	08.06.2024	
		Risk projection, Risk refinement	12.06.2024	12.06.2024	
		RMMM	18.06.2024	18.06.2024	
		RMMM Plan	19.06.2024	19.06.2024	
		Quality management	20.06.2024	20.06.2024	
		Software quality assurance	22.06.2024	22.06.2024	
		Software Reviews, Formal technical reviews	22.06.2024	22.06.2024	
		Statistical Software quality Assurance	25.06.2024	25.06.2024	
		Software reliability	26.06.2024	26.06.2024	
		The ISO 9000 quality standards	29.06.2024	29.06.2024	
Total			**60**		

METHODS OF TEACHING:

M1 : Lecture Method	**M4 : Presentation /PPT**	**M7 : Assignment**
M2 : Demo Method	**M5 : Lab/Practical**	**M8 : Industry Visit**
M3 : Guest Lecture	**M6 : Tutorial**	**M9 : Project Based**

NOTE:

* Any Subject in a Semester is suppose to be completed in 55 to 65 periods.
* Each Period is of 50 minutes.
* Each unit duration & completion should be mentioned in the Remarks Coloumn.
* List of Suggested books can be marked with Codes like T1, T2, R1, R2 etc.

7. Session Execution Log:

S no	Units	Scheduled started date	Completed date	Remarks
1	UNIT-I	20.02.2024	23.03.2024	COMPLETED
2	UNIT-II	26.03.2024	13.04.2024	COMPLETED
3	UNIT-III	22.04.2024	09.05.2024	COMPLETED
4	UNIT-IV	10.05.2024	12.06.2024	COMPLETED
5	UNIT-V	15.06.2024	29.06.2024	COMPLETED

8. Lecture Notes – (hand written)

9. ASSIGNMENT QUESTIONS ALONG SAMPLE ASSIGNMENT SCRIPTS

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
B. TECH-II -SEM-II
ASSIGNMENT-I
Subject: SOFTWARE ENGINEERING MARKS: 5

	BTL	CO
1 .a) Define software engineering? explain nature of software?	**1**	**1**
b) What is CMMI? Discuss how various maturity levels of CMM can be measured?	**6**	**1**
2 .a) Discussthe incremental software development process model.	**6**	**1**
b)Explain software myths in detail?	**2**	**1**
3. a)Explain about any two evolutionary software process models?	**2**	**1**
b) Distinguish between PSP&TSP?	**4**	**2**
4. a)Explain about SRS in detail.	**2**	**2**
b) Explain about feasibility study in detail.	**2**	**2**
5. a)Explain about context and Behavior system model.	**2**	**2**
b)Explain about software Quality Attributes	**2**	**2**

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B. TECH-II -SEM-II

ASSIGNMENT-II

Subject: SOFTWARE ENGINEERING MARKS:5

	BTL	CO	
1 **a) Explain about Formal Technical Review, how does it help software quality checking**	**2**	**5**	
b) Discuss about Risk Management		**6**	**5**
2.a)Discuss about software Quality metrics		**6**	**5**
b)What is meant by software risk. Discuss about reactive and proactive risk strategies		**6**	**5**
3. a)Discuss about test Strategies for conventional software		**6**	**4**
b)Explain about strategic approach to software testing		**2**	**4**
4.a)Explain about conducting component level design		**2**	**4**
b) Demonstrate about metrics for source code and metric for maintenance		**2**	**4**
5.a)Discuss about mapping data flow into software architecture and Explain software Architecture.		**6**	**3**
b)List and explain different kinds of architectural styles and pattern			

II.B.TECH- II -SEM(R22) –PRE FINAL EXAMINATIONS-JUN-2024 Date: 29-06-24
Subject: SE Time: 02.00-04.00PM
Branch: CSE Marks: 50 M

Note: Question paper contains two parts, Part - A and Part - B.

Part-A is compulsory which carries 10 marks. Answer all questions in part-A.

Part-B consists of 5 units. Answer any one full question from each unit. Each question carries

10 marks and may have a,b sub questions.

PART-A 5x2=10 M

1.a) Define Architectural Design. (CO3)

b) Mention types of UML diagrams. (CO3)

2. a) Identify any three differences between validation testing and system testing. (CO4)

b) List the metrics for source code. (CO5)

3 a) Define formal technical reviews. (CO5)

b) Contrast reactive vs proactive risk strategies**. (CO5)**

4.a) Distinguish between user requirements and system Requirements. (CO3)

b) What is cohesion

5.a) List the principles of a software design. (CO3)

b) What is meant by smoke testing? (CO4)

PART-B **5x8=40**

6. a) Demonstrate sequence diagram and component diagram with an example. (CO3)

7. a) Explain Software Risks. (CO4)

   b) Discuss various methods for Risk Identification (CO4)

8. Discuss about the Metrics for Analysis and Design (CO5)

9.a) Explain. White box testing and black box testing. (CO4)

   b) Validation testing with an example.

10.a) Discuss about the ISO 9000 quality standards. (CO5)

   b) Discuss about software reviews in detail

11. Explain in detail about RMMM plan(CO4)

10. MID EXAM QUESTION PAPER ALONG SAMPLE ANSWER SCRIPTS

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B. TECH-II -SEM-II MID EXAMINATIONS-I

Subject: SOFTWARE ENGINEERING

SET-I

Time: 10:00 AM to12:00PM **Date:**

Branch: CSE **Marks: 30M**

Note: Question paper contains two parts, Part-A and Part- B.
Part-A is compulsory which carries 10 marks.
Answer all questions in part-A.

Answer any 4 questions in part-B.
Each question carries5 marks.

PART-A **5 x 2 M = 10 M**

* Define software engineering? and write a characteristic's [CO1]
* Differentiate between PSP&TSP.[CO1]
* Differentiate between function and non-functional requirements [CO2]
* Discuss about various Elicitation Techniques. [CO2]
* Define system models and list out. [CO2]

PART-B **4 x 5 M = 20M**

* a) Explain about changing nature of software [CO1]
  * Explain about CMMI in detail. [CO1]

* Explain software engineering myths?
* a) Explain the waterfall model?
  b) Explain layered technology? [CO1]

* Discuss about requirement engineering process? [CO2]
* Discuss about chrematistics of SRS and explain SRS in detail with example. [CO2]
* Explain about design process and design quality? [CO3]

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B. TECH-II -SEM-II MID EXAMINATIONS-I

Subject: SOFTWARE ENGINEERING

SET-II
Time: 10:00 AM to12:00PM **Date:**
Branch: CSE **Marks: 30M**

Note: Question paper contains two parts, Part-A and Part- B.
Part-A is compulsory which carries 10 marks.
Answer all questions in part-A.
Answer any 4 questions in part-B.
Each question carries5 marks.

PART-A **5 x 2 M = 10 M**

* Define software engineering? and list out software myths [CO1]
* What is process framework? [CO1]
* Differentiate between PSP&TSP.[CO1]
* What is user requirements? [CO2]
* Define system models? and list out? [CO2]

PART-B **4 x 5 M = 20M**

* a) Explain about the evolving role of software [CO1]
  b) Explain about CMMI in detail. [CO1]

* Differentiate between function and non-functional requirements? [CO2]

* a) explain the waterfall model? [CO1]
  b) explain layered technology? [CO1]

* Discuss about requirement elicitation and validation? [CO2]
* Discuss about SDLC. [CO2]
* Explain about UML? [CO3]

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B. TECH-II -SEM-II MID EXAMINATIONS-I

Subject: SOFTWARE ENGINEERING

SET-III
Time: 10:00 AM to12:00PM **Date:**
Branch: CSE **Marks: 30M**

Note: Question paper contains two parts, Part-A and Part- B.
Part-A is compulsory which carries 10 marks.
Answer all questions in part-A.
Answer any 4 questions in part-B.
Each question carries5 marks.

PART-A **5 x 2 M = 10 M**

* Define software myths and list out? [CO1]
* Explain process framework? [CO1]
* Differentiate between function and non-functional requirements [CO2]
* Discuss about various Elicitation Techniques. [CO2]
* Explain about SDLC [CO2]

PART-B **4 x 5 M = 20M**

* a) Explain about changing nature of software [CO1]
  b) Explain about CMMI in detail. [CO1]

* Explain about SRS? [CO1]
* Explain abut evolutionary process models? [CO1]

* Discuss about feasibility studies? [CO2]
* Discuss about context models. [CO2]
* Explain about design process and design quality? [CO3]

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B. TECH-II -SEM-II MID EXAMINATIONS-II

Subject: SOFTWARE ENGINEERING

SET-I

Time: 10:00 AM to12:00PM **Date:**

Branch: CSE **Marks: 30M**

Note: Question paper contains two parts, Part-A and Part- B.
Part-A is compulsory which carries 10 marks.
Answer all questions in part-A.
Answer any 4 questions in part-B.
Each question carries5 marks.

PART-A **5 x 2 M = 10 M**

* Define Architectural Design. (CO3)
* What is meant by smoke testing? (CO4)
* Differentiate between black box testing and white box (CO4)
* Define FTR? (CO5)
* Contrast reactive vs proactive risk strategies**.** (CO5)

PART-B **4 x 5 M = 20M**

* Demonstrate sequence diagram and component diagram with an example. (CO3)

* Explain about building block of UML. (CO3)
* Discuss about the Metrics for Analysis and Design. (CO4)
* Differentiate between validation testing and system testing. (CO4)
* Explain about RMMM and RMMM plan? (CO5)
* Explain about (CO5)
  * ISO 9000 Quality standards.
  b) Quality concepts

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B. TECH-II -SEM-II MID EXAMINATIONS-II

Subject: SOFTWARE ENGINEERING

SET-II

Time: 10:00 AM to12:00PM **Date:**

Branch: CSE **Marks: 30M**

Note: Question paper contains two parts, Part-A and Part- B.
Part-A is compulsory which carries 10 marks.
Answer all questions in part-A.
Answer any 4 questions in part-B.
Each question carries5 marks.

PART-A **5 x 2 M = 10 M**

* What is class diagram with example? (co3)
* Define architectural styles and patterns? (co3)
* Define testing? and software quality? (Co4)
* List out software metrics? What is risk refinement? (co5)
* Explain software quality assurance factors? (Co5)

PART-B **4 x 5 M = 20M**

* Demonstrate class diagram and use case diagram with example? (co3)

* Explain about building block of UML. (CO3)
* Discuss block box testing, white box and validation testing? [CO4]
* Explain about software metrics? (Co4)
* Difference between reactive vs proactive risk strategies? (Co5)
* Discuss the software reliability and ISO 9000 quality standards(co5)

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B. TECH-II -SEM-II MID EXAMINATIONS-II

Subject: SOFTWARE ENGINEERING

SET-III

Time: 10:00 AM to12:00PM **Date:**

Branch: CSE **Marks: 30M**

Note: Question paper contains two parts, Part-A and Part- B.
Part-A is compulsory which carries 10 marks.
Answer all questions in part-A.
Answer any 4 questions in part-B.
Each question carries5 marks.

PART-A **5 x 2 M = 10 M**

* List out UML Diagrams? (co3)
* What is Architectural styles? (Co3)
* Explain validation testing? (co4)
* Define metrics and business metrics(co4)
* Discuss about software reviews? (co5)

PART-B **4 x 5 M = 20M**

* Explain about sequence and component diagram with examples? (Co3)
* Discuss about building blocks of UML? (co3)
* Deference between block box and white box? (co4)
* Discuss about the Metrics for Analysis and Design. (CO4)
* Deference between reactive vs proactive risk strategies? (Co5)
* Discuss about formal technical reviews and ISO 9000 Quality standards? (co5)

11.SCHEME OF EVALUATION:

MID 1

S.NO	THEORY	MARKS	TOTAL MARKS
	PART-A		
1	Define & characteristic's	2	2
2	Differentiate	2	2
3	Differentiate	2	2
4	Discuss	2	2
5	Definition system and list out.	2	2
	PART-B		
6	a) Explaination changing nature of software	3	5
	b)Explaination about CMMI	2	

7	a)Explainationthe waterfall model	2	5
	b) Explaination layered technology	3	
8	Discuss about requirement engineering process	5	5
9	Discuss about chrematistics of SRS and Explaination SRS	5	5 5
10	Explainationabout design process and design quality	5	5
11	Explainationm UML	5	5
	Total		30

MID 2

S.NO	THEORY	MARKS	TOTAL MARKS
	PART-A		
1	List out UML Diagrams	2	2
2	Definition	2	2
3	Explaination validation testing	2	2
4	Definition	2	2
5	Discuss about software reviews	2	2
	PART-B		
6	Explaination sequence and component diagram	5	5
7	Discuss building blocks of UML	5	5
8	Difference between block box and white box	5	5
9	Discuss about the Metrics for Analysis and Design.	5	5
10	Difference between reactive vs proactive risk strategies	5	5
11	Discuss about formal technical reviews and ISO 9000 Quality standards	5	5
	Total		30

12.Mapping of COs and Pos with PSOs

Mapping of COs and Pos with PEOs

COURSE NAME: SOFTWARE ENGINEERING													
COURSE		Relationship of Course outcomes to Program Outcomes (PO AVG)											
CO-PO&PSO MATRIX	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CO1	3	-	-	-	-	2	3	-	2	-	3	2	3
CO2	3	3	3	2	-	-	-	2	-	-	-	-	3
CO3	3	3	2	2	2	-	-	-	3	2	2	2	-
CO4	3	2	3	2	3	2	2	3	-	-	3	3	3
CO5	2	1	2	1	3	-	-	-	-	-	-	-	3
AVERAGE	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**

13.Cos,POs,PSOs JUSTIFICATION

COURSE OUTCOMES

CO1: Illustrate the software process models & software engineering process.
Correlated with PO1 moderately: Fundamental thinking of a software process model is an abstraction of the software development process. The models specify the stages and order of a process. It provides fundamental thinking of a representation of activities of the process and the sequence in which they are performed. So, overall the correlation of CO1 to PO1 is good.
Correlated with PO6 moderately: Apply knowledge learned where the assignments generally solves a more difficult problem than the activities and where students often work in teams of two**.** So, overall the correlation of CO1with PO6 is good.
Correlated with PO7 moderately: Knowledge in this refers to the students ability to recall software engineering concepts. So, overall the correlation of CO1 with PO7 is moderate.
Correlated with PO9 moderately: **Ability** to **understand** and restate or describe a learnt concept using their own words or explanation. So, overall the correlation of CO1 with PO9 is moderate.
CO2: Define software engineering principles with respect to Software Development Life cycle.
Correlated with PO1 moderately: Fundamental thinking of a software development life cycle and understand each stage of SDLC. So, overall the correlation of CO2 to PO1 is good.
Correlated with PO2 moderately: Ability to analyze to a problem and identify and formulate the SDLC based on requirements for the appropriate solution. So, overall the correlation of CO2 to PO2 is good.
Correlated with PO3 moderately: Ability to design implement and evaluate a computer based system component or a program to meet desired needs by SDLC designing phase. So, the correlation of CO2 is good.
Correlated with PO4 moderately: To conduct and apply by different testing mechanisms student can analyze and interpret data. So, overall the correlation of CO2 to PO4 is moderate.
Correlated with PO8 moderately: Ability to understand and restate or describe a learnt concept using their own words or explanation and also include the keywords explain,

describe, discuss, identify, review, select, and predict.
CO3: Analyze the software design in the context of the software life cycle with an emphasis on design practice.
Correlated with PO1 moderately: Applying the skills in using the theories learnt to solve new problems.
Correlated with PO2 moderately: Analyze in separating the whole project into different components.
Correlated with PO3 moderately: Create and Design the project in UML Diagrammatic representation.
Correlated with PO4 moderately: Use research-based knowledge and test methods including design of experiments.
Correlated with PO5 moderately: Analysis and interpretation of data.
Correlated with PO9 moderately: Synthesis of the information to provide valid conclusions.
Correlated with PO10 moderately: Analyze to write effective reports and design documentation to make effective presentations.
Correlated with PO11 moderately: knowledge and understanding of the engineering and management principles.
Correlated with PO12 moderately: Synthesis and manage projects in multidisciplinary environments.
CO4: Implement the state of the art in software testing and the use of software metrics to measure software quality.
Correlated with PO1 moderately: Fundamental thinking of a software process model is an abstraction of the software development process.
Correlated with PO2 moderately: Apply knowledge learned where the assignments generally solves a more difficult problems.
Correlated with PO3 moderately: Design applicable solutions in one or more applications domains.
Correlated with PO4 moderately: Apply new software testing methodologies to bring out effective results.

Correlated with PO5 moderately: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools.
Correlated with PO6 moderately: Apply new software models and technologies for the growth of the society.
Correlated with PO7 moderately: Understand the impact of the professional engineering solutions in societal and environmental contexts.
Correlated with PO8 moderately: Apply ethical principles and commit to professional ethics.
Correlated with PO11 moderately: Apply the knowledge to one's own work, as a member and leader in a team.
Correlated with PO12 moderately: Understand the ability to engage in independent and life-long learning in the broadest context of technological change.
CO5: Design quality assurance plans and Apply quality assurance tools & techniques.
Correlated with PO1 moderately: Create a bug free software with good design and quality by using appropriate techniques.
Correlated with PO2 moderately: Evaluate, formulate, review research literature, and analyze complex engineering problems for conclusion.
Correlated with PO3 moderately: Create and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
Correlated with PO4 moderately: Analyze verification, validation activities, static, dynamic testing tools.
Correlated with PO5 High: Knowledge helping to recognize human, security, social, deploying and entrepreneur issues and responsibilities relevant to engineering software and digitalization of services.

14.Attainment of COs,POs AND PSOs (Excel sheet)

AFTER RESULT

15. Previous Question Papers

R18

CodeNo:155DB

JAWAHARLALNEHRUTECHNOLOGICALUNIVERSITYHYDERABAD

B.TechIIIYearISemesterExaminations,September-2021SOFTWAREENGINEERING

(Common to CSE,IT)

Time:3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

1.a) Explain about evaluation of software engineering methodologies.
b) What are the challenge software engineering? [8+7]

2.a) Explain Software development process models.
b) Write a short note on Water fall model. [7+8]

3.a) Explain the importance of software specification of requirements.
b) Write a short note on Context Model. [7+8]

* Describevariousprototypingtechniquesanddiscussonobjectorientedanalysisandmodeling .[15]

* Briefly explain about the following:
  * Sequence diagram
  * Use case diagram. [7+8]

* What are the design principles of a goods software design? Explain. [15]

7.a) b)	What is testing? How is it different from debugging? Explain various structural testing techniques with suitable examples.	[7+8]
8.a) b)	List and explain the various software quality factors. Describe the role of software reviews in achieving good quality software.	[7+8]

16.Power point presentations (PPTs)

PPTs AND PRESENTATION

17. Innovative Teaching method if any(Attached Innovative Assignment)

QUESTIONS

- What is water fall model? How is it different from other engineering process models? Explain about risk refinement? **(CO5)**
- Explain about RMMM? **(CO5)**
- Discuss these principles of risk management which were identified by SEI. **(CO5)**
- Elaborate on evolution of software **(CO1)**
- Explain about Feasibility studies? **(CO2)**
- Explain the requirement analysis techniques **(CO5)**
- Discuss the design principles that reduce user's memory in user interface **(CO3)**
- Define interface. Discuss various types of interfaces. Give examples for each. **(CO3)**
- What is meant by black box testing? Explain graph-based testing method with example **(CO4)**
- Explain about risk refinement? **(CO5)**

* Explain about RMMM? **(CO5)**
* Discuss these principles of risk management which were identified by SEI. **(CO5)**

Expert Lectures with topics & Schedules (if any)

S.No	Expert Name	Topic	Date
1.	Dr.Ravindra Babu Kallam rbkallam2510@gmail.com	SDLC Models	

18. References (Textbook/Websites/Journals)

Textbook

* Software Engineering, A practitioner's Approach- Roger S.Pressman, 6th edition, McGraw Hill International Edition.
* Software Engineering- Sommerville,7th edition,Pearson Education.
* The unified modeling language user guide GradyBooch, JamesRambaugh, IvarJacobson, Pearson Education.

REFERENCE BOOKS:

* Software Engineering, an Engineering approach- JamesF.Peters, WitoldPedrycz, John Wiley.
* Software Engineering principles and practice-Waman SJawadekar, The McGraw- Hill Companies.
* Fundamentals of object-oriented design using UML Meilerpage-Jones: Pearson Education

Websites or URLs e- Resources

1. https://www.javatpoint.com/software-engineering-tutorial

2.https://www.tutorialspoint.com/software_engineering/index.htm

* https://www.guru99.com/what-is-software-engineering.html
* https://www.geeksforgeeks.org/software-engineering/

JOURNALS WITH MIN 5 REF PAPER FOR LITERATURE STUDY

* https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&**arnumber=9503331**
* **https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9387593**
* **https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9739868**
* **https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9780058**
* **https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9712241**