B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

COURSE FILE

Name of the Faculty: Dr. Gitosree Khan

Designation: Associate Professor

Department: Information Technology

Academic Year: 2024-25

Course Name: Software Engineering

Course Code: ESC 501

Regulation: MAKAUT (2018)

Program: B. Tech in Information Technology

Year & Semester: 3rd Year, 5th Semester

Batch: 2022-2026

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Table of Contents

S. No. **Item description**

8.1 Quiz Questions for Identification of Slow Learners, Solution, Assessment, and Sample Copies of Corrected Answer Scripts
8.2 List of Slow Learners
8.3 List of Advanced Learners
8.4 Time Table for Remedial Class and Class for Advanced Learners
8.5 Notes for Slow Learners
8.6 Notes for Advanced Learners
8.7 Attendance Sheet for Slow Learners with Signature
8.8 Attendance Sheet for Advanced Learners with Signature
8.9 Quiz Questions for Slow Learners (Taken at the End of Remedial Class Schedule), Solution, Assessment, and Sample Copies of Corrected Answer Scripts

9 Events Organized for Curricular Gap

9.1 Notice for Guest Lecture
9.2 Attendance of Students with Signature
9.3 Quiz Questions on Curricular Gap, Solution, Assessment, and Sample Copies of Corrected Answer Scripts

10 Continuous Assessments, University Results, and End Semester Students' Survey

10.1 Topics for Presentation (on CO1), Rubrics, Assessment, and Sample Copies of Presentation
10.2 Topics for Report Writing (on CO2), Rubrics, Assessment, and Sample Copies of Report Writing
10.3 Class Test 1 (on CO1, CO2, and CO3), Scheme of Evaluation, Model Answer, Assessment, and Sample Corrected Copies of Class Test 1
10.4 Class Test 2 (on CO4, and CO5), Scheme of Evaluation, Model Answer, Assessment, and Sample Corrected Copies of Class Test 2
10.5 Assessment of Quiz (Conducted by University, on CO1 to CO5)
10.6 Assignment (on CO1 to CO5), Scheme of Evaluation, Model Answer, Assessment, and Sample Corrected Copies of Assignment
10.7 University Question Paper, Mapping with CO, Answer Key, University Results and Results Analysis
10.8 End Semester Students' Survey (CO Learning Assessment), Mapping with CO, Sample Students' Survey

11 Impact Analysis of Slow Learners (Please add one column for the final year students on placement/higher studies/entrepreneurship)

12 CO, PO and PSO Attainment

12.1 CO Attainment
12.2 PO Attainment
12.3 Observations on CO and PO Attainment
12.4 CO and PO Attainment of the Entire Class
12.5 Action Plan for Next Academic Year Based on CO and PO attainment

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

INSTITUTE VISION, MISSION, DEPARTMENTAL VISION, MISSION, PEOs, POs, AND PSOs

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

INSTITUTE

VISION

To emerge as a progressive and premier institute for Engineering and Technology education with ethical values for creative engineering solutions commensurate with global changes.

MISSION

- Offer quality education through modern accessible, comprehensive and research-oriented teaching – learning process.
- Create opportunities for students and faculty members in acquiring knowledge through research and development.
- Providing effective interface with industry by strengthening Industry-Institute interaction and developing entrepreneurial skills.
- Meet ever-changing needs for the nation through rational evolution towards sustainable and environment friendly technologies.

Department of Information Technology

VISION

The Information Technology Department will become a centre for advanced learning through research and development of innovative applications of information in industry and society.

MISSION

- To create a learner-centric environment that motivates the students in adapting emerging technologies of the rapidly evolving information society.
- To incubate students to grow as industry ready professionals, proficient research scholars and enterprising entrepreneurs.
- To promote social, environmental and technological responsiveness among the members of the faculty and students.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1: The graduates of IT will have strong domain knowledge of IT fundamentals, principles, tools and technologies along with a strong foundation of Mathematics and Science.

PEO2: The graduates of IT will have a successful career in the IT industry or they will pursue higher studies and take part in cutting edge research or will create employability for others by being an entrepreneur.

PEO3: The graduates of IT will be able to document and communicate effectively, will demonstrate leadership qualities, and will be able to provide environment friendly, cost effective, ethical, sustainable solutions addressing the needs of the society.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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.
7. **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.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **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.
12. **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.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Empower students with engineering knowledge, to analyze complex engineering problems, design effective solutions using cutting edge technologies such as cloud computing, IoT, Data analytics etc.

PSO 2: Equip students for successful employment, higher studies and research being aware of ethical, environmental, societal aspects; to be impactful leaders, effective team members empowered with effective communication skills.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

COURSE SYLLABUS

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Maulana Abul Kalam Azad University of Technology, West Bengal
formerly known as West Bengal University of Technology
In Pursuit of Knowledge and Excellence

Department of Information Technology

III Year - V Semester

Software Engineering
Code: ESC 501; Contacts: 3L = 3hrs; Credits: 3

Module1
Overview of System Analysis & Design, Business System Concept, System Development Life Cycle, Waterfall Model, Spiral Model, Feasibility Analysis, Technical Feasibility, Cost- Benefit Analysis, COCOMO model. 10L

Module 2
System Design
Context diagram and DFD, Problem Partitioning, Top-Down And Bottom-Up design; Decision tree, decision table and structured English; Functional vs. Object- Oriented approach. 5L

Module 3
Coding & Documentation
Structured Programming, OO Programming, Information Hiding, Reuse, System Documentation. 4L
Testing
Levels of Testing, Integration Testing, Test case Specification, Reliability Assessment, Validation & Verification Metrics, Monitoring & Control. 8L

Module 4
Software Project Management
Project Scheduling, Staffing, Software Configuration Management, Quality Assurance, Project Monitoring. 7L

Module 5
Static and dynamic models, why modeling, UML diagrams: Class diagram, interaction diagram: collaboration diagram, Sequence diagram, state chart diagram, activity diagram, implementation diagram.

Textbooks:

1. R.G. Pressman : Software Engineering,TMH.
2. CC. Ghezzi, M. Jazayeri and D. Mandrioli : Fundamentals of Software Engineering, PHI.
3. Pressman, Software Engineering : A practitioner's approach– (TMH)

4. Pankaj Jalote, Software Engineering- (Wiley-India)
5. N.S. Gill, Software Engineering – (Khanna Publishing House)
6. Rajib Mall, Software Engineering- (PHI)
7. Agarwal and Agarwal, Software Engineering – (PHI)
8. Sommerville, Software Engineering – Pearson
9. Martin L. Shooman, Software Engineering – TMH

Reference Books:

1. http://webfuse.cqu.edu.au/Courses/aut2001/95169/Extra_Examples/DFD_Example_1/
2. http://www.cs.unc.edu/~stotts/145/cocomo10.gif
3. www.his.sunderland.ac.uk/~cs0mel/Alb_Example.doc
4. Sabnam Sengupta, Swapan Bhattacharya, “Formalization of Functional Requirements of Software Development Process”, In the Journal of Foundations of Computing and Decision Sciences (FCDS), Institute of Computing Science, Poznan University of Technology, pp 83-115, Poland Vol 33, Issue 1, 2008.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

COURSE INFORMATION SHEET

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Course Information Sheet

Program Name: B.Tech. in Information Technology	**Academic Year:** 2024-25
Year: 3rd	**Semester:** 5th
Course Name: Software Engineering	**Credit:** 3
Course Code: ESC 501	**Course Type:** Core
Course Area/Domain: Software Engineering	**Contact Hours:** 3 Hours/Week.
Lab Course Name (If Any): Software Engineering Laboratory	**Corresponding Lab Course Code (If Any):** ESC 591
Regulation: MAKAUT (2018)	**Faculty Name:** Dr. Gitosree Khan

Course Pre-requisite/Exposure:

C. Code	Course Name	Description	Sem
ES-201 PCC CS 301	Programming for Problem Solving (C/Python), Data Structures	Fundamental programming concepts	II, III

Course Description:

The course on Software Engineering (ESC 501) introduces students to the principles, methods, and practices of developing reliable, efficient, and high-quality software systems. It covers the entire software development life cycle, including project planning and management, requirements analysis, system and object-oriented design, construction, testing, and maintenance. Emphasis is placed on software quality assurance, reliability models, and measurement techniques, along with modern development approaches such as Agile methodologies, Extreme Programming, and Scrum. Students learn to apply modeling tools such as UML and requirement specifications, use software metrics for evaluation, and implement structured and object-oriented design practices. By integrating theoretical concepts with practical techniques, the course equips students with the skills to manage software projects effectively, mitigate risks, and deliver sustainable software solutions that meet user needs.

Course Objectives:

- To introduce the fundamental concepts, processes, and practices of software engineering and its role in the development of reliable and efficient software systems.
- To enable students to understand software development life cycle (SDLC) models and apply them to real-world projects.
- To develop skills in software project management, including effort estimation, scheduling, risk analysis, and configuration management.
- To familiarize students with requirements analysis, system modeling, and the use of tools such as UML for effective software design.
- To impart knowledge of software quality assurance frameworks, metrics, and reliability models for evaluating and improving software products.
- To cultivate the ability to design and implement object-oriented solutions using principles such as modularity, encapsulation, and design patterns.
- To train students in various software testing methodologies for ensuring functional and non-functional quality.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Course Content:

Module No.	Description of Topic	Contact Hr.
I	Overview of System Analysis & Design, Business System Concept, System Development Life Cycle, Waterfall Model, Spiral Model, Feasibility Analysis, Technical Feasibility, Cost- Benefit Analysis, COCOMO model.	**10**
II	System Design – Context diagram and DFD, Problem Partitioning, Top-Down and Bottom-Up design; Decision tree, decision table and structured English; Functional vs. Object- Oriented approach.	**5**
III	Coding & Documentation – Structured Programming, OO Programming, Information Hiding, Reuse, System Documentation. Testing – Levels of Testing, Integration Testing, Test case Specification, Reliability Assessment, Validation & Verification Metrics, Monitoring & Control.	**12**
IV	Software Project Management – Project Scheduling, Staffing, Software Configuration Management, Quality Assurance, Project Monitoring.	**7**
V	Static and dynamic models, why modeling, UML diagrams: Class diagram, interaction diagram: collaboration diagram, Sequence diagram, state chart diagram, activity diagram, implementation diagram.	**10**

Course Outcomes (CO):

Upon completion of the course, the students will be able to:

S. No.	CO Statement	Bloom's Level
CO1	Understand software lifecycle processes and models including traditional and modern approaches.	(Understand) Level I
CO2	Design software using requirement model like DFD, decision tree, decision table, structured English.	(Create) Level VI
CO3	Apply software testing and quality assurance techniques with relevant standards to ensure reliable software at the modular system and organizational level.	(Apply) Level III
CO4	Develop project schedule and network diagram for different projects using standard metrics and models like cost estimation, scheduling and risk management.	(Create) Level VI
CO5	Analyze the structure and behaviour of a software system using modern engineering tools like UML diagrams.	(Analyze) Level IV

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Justification of Course Outcomes:

COs	Bloom's Level	Justification
CO1	**Understand**	The students will be able to describe software lifecycle processes and models, including both traditional and modern approaches, by explaining their phases, characteristics, advantages, and limitations, thereby demonstrating a clear understanding of fundamental software development concepts.
CO2	**Create**	The students will be able to design software using requirement modeling techniques such as DFDs, decision trees, decision tables, and structured English by constructing appropriate representations of system requirements and developing logical and structured solutions.
CO3	**Apply**	The students will be able to apply software testing and quality assurance techniques along with relevant standards by implementing testing methods such as unit, integration, and system testing to ensure reliability and correctness of software at different levels.
CO4	**Create**	The students will be able to develop project schedules and network diagrams using standard metrics and models such as cost estimation, scheduling techniques, and risk management by formulating effective project plans for successful software development.
CO5	**Analyze**	The students will be able to analyze the structure and behavior of software systems using UML diagrams by decomposing systems into components, examining relationships, and interpreting dynamic and static aspects of system design.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

CO-PO/PSO Relationship Matrix: (Level of Mapping: 3- High; 2- Moderate; 1- Low)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	1	1								1	1	
CO2	3	3	3	3				1	1	1	1	1	3	1
CO3	3	2	1	2		1	1	1	1	1		1	2	
CO4	3	3	3	3		1	1	1	1	1	1	1	3	1
CO5	3	3	2	2	1	1			1	1	1	1	2	
Avg	**2.8**	**2.6**	**2**	**2.2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2.2**	**1**

PO1: Engineering Knowledge	**PO7:** Environment & Sustainability
PO2: Problem Analysis	**PO8:** Ethics
PO3: Design / Development of Solutions	**PO9:** Individual & Team Work
PO4: Conduct Investigations of complex problems	**PO10:** Communication Skills
PO5: Modern Tool usage	**PO11:** Project Management & Finance
PO6: Engineer & Society	**PO12:** Life-long Learning
PSO1: Empower students with engineering knowledge, to analyze complex engineering problems, design effective solutions using cutting edge technologies such as cloud computing, IoT, Data analytics etc.	
PSO2: Equip students for successful employment, higher studies and research being aware of ethical, environmental, societal aspects; to be impactful leaders, effective team members empowered with effective communication skills.	

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Justification of Mapping:

COs	PO/PSO Mapped	Level of Mapping	Justification
CO1	**PO1, PO2, PO3, PO4, PO12, PSO1**	**2,2,1,1,1,1**	The students are able to understand software lifecycle models, supporting PO1 and PO2 through the application of engineering knowledge and problem analysis. It also contributes to PO3 and PO4 by enabling selection and evaluation of suitable development approaches, while promoting PO12 through awareness of modern practices, and aligns with PSO1 by strengthening core software engineering skills.
CO2	**PO1, PO2, PO3, PO4, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2**	**3,3,3,3,3,1,1,1,1,1,3,1**	The students are able to design software using requirement modeling techniques such as DFD, decision trees, decision tables, and structured English, strongly supporting PO1–PO4 through application of knowledge, analysis, design, and investigation of problems. It also aligns with PO8 by considering ethical aspects in system design, while contributing to PO9–PO11 at a basic level through teamwork, communication, and project understanding. Additionally, it supports PO12 for continuous learning and strongly maps to PSO1 and PSO2 by enhancing domain-specific and practical software design skills.
CO3	**PO1, PO2, PO3, PO4, PO6, PO7, PO8, PO9, PO10, PO12, PSO1**	**3,2,1,2,1,1,1,1,1,1,2**	The students are able to apply software testing and quality assurance techniques with relevant standards, supporting PO1 and PO2 through knowledge application and problem analysis. It contributes to PO3 and PO4 by ensuring reliable system design and evaluation, while also addressing PO6–PO8 through awareness of societal, environmental, and ethical aspects. Additionally, it supports PO9–PO10 at a basic level for teamwork and communication, promotes PO12 for continuous learning, and aligns with PSO1 by strengthening practical software quality and reliability skills.

CO4	**PO1, PO2, PO3, PO4, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2**	**3,3,3,3,1,1,1,1,1,1,1,3,1**	The students are able to develop project schedules and network diagrams using cost estimation, scheduling, and risk management techniques, strongly supporting PO1–PO4 through application of knowledge, analysis, design, and evaluation. It also addresses PO6–PO8 by considering broader impacts and ethics, while contributing at a basic level to PO9–PO11 through teamwork, communication, and project management aspects. Additionally, it supports PO12 for continuous learning and strongly aligns with PSO1 and PSO2 by enhancing practical skills in software project planning and management.
CO5	**PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO11, PO12, PSO1**	**3,3,2,2,1,1,1,1,1,1,2**	The students are able to analyze the structure and behavior of software systems using UML and modern tools, strongly supporting PO1 and PO2 through knowledge application and problem analysis. It contributes to PO3 and PO4 by aiding system design and evaluation, while also aligning with PO5 through the use of modern engineering tools. Additionally, it addresses PO6 and PO9–PO11 at a basic level for societal awareness, teamwork, communication, and project understanding, supports PO12 for continuous learning, and aligns with PSO1 by strengthening software design and analysis skills.

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Class Time Table

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Lesson Plan

Course Name: Software Engineering **Course Code: ESC 501**

S. No.	Lecture/ Tutorial No.	Topics to be Covered	Text/ References	Teaching Pedagogy*
Module I				
1.	L1	Overview of System Analysis & Design Identify and describe a real-life system (e.g., ATM system)	T1, T2	C&T, PPT, CD
2.	L2	Business System Concept Draw components of a business system (input-process-output)	T1, R1	C&T, PPT, CD
3.	L3	System Development Life Cycle (SDLC) Create SDLC phases for a Library Management System	T1, T2, T3, R1, WR1	C&T, PPT, CD
4.	L4	Waterfall Model Case study: When Waterfall is suitable	R1	C&T, PPT, CD, PS
5.	L5	Spiral Model Compare Spiral vs Waterfall with example	R1	C&T, PPT, CD, Q, PS
6.	L6	Feasibility Analysis Overview Perform feasibility study for an Online Food Delivery system	T1, T2, R1, WR1	C&T, PPT, CD
7.	L7	Technical Feasibility Analyze technical needs for a mobile app	T1, T2, R1, WR1	TA: Chalk/ C&T, PPT, CD
8.	L8	Cost-Benefit Analysis Prepare cost vs benefit table for a project	T1, T2, T3, R1, WR1	C&T, PPT, CD
9.	L9	COCOMO Model Estimate effort using basic COCOMO (simple project)	R1	C&T, PPT, CD, Q, PS
10.	L10	Revision / Case Study on Module I Mini project discussion	T1, T2, R1	C&T, PPT, CD

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Module II				
S. No.	**Lecture/ Tutorial No.**	**Topics to be Covered**	**Text/ References**	**Teaching Pedagogy***
11.	L11	System Design Overview	T1, T2, R1	C&T, PPT, CD
12.	L12	Context Diagram	T1, T2, T3, R1	C&T, PPT, CD
13.	L13	Data Flow Diagram (DFD)	T1, T2, R1	C&T, PPT, CD
14.	L14	Problem Partitioning	T1, T2, T3, R1	C&T, PPT, CD
15.	L15	Top-Down Design Approach	R1	C&T, PPT, CD, PS
16.	L16	Bottom-Up Design Approach	T1, T2, T3, R1, WR1	C&T, PPT, CD
17.	L17	Decision Tree	R1	C&T, PPT, CD, PS
18.	L18	Decision Table	T1, T2, R1, WR1	C&T, PPT, CD
19.	L19	Structured English	R1	C&T, PPT, CD, PS
20.	L20	Functional vs Object-Oriented Approach	T1, T3, R1	C&T, PPT, CD

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Module III				
S. No.	**Lecture/ Tutorial No.**	**Topics to be Covered**	**Text/ References**	**Teaching Pedagogy***
21.	L21	Structured Programming	T1, R1	C&T, PPT, CD
22.	L22	Object-Oriented Programming Concepts	T1, T2, R1	C&T, PPT, CD
23.	L23	Information Hiding	T1, T2, R1	C&T, PPT, CD
24.	L24	Software Reuse	R1	C&T, CD
25.	L25	System Documentation	R1	C&T, CD, PS
26.	L26	Testing Overview & Levels of Testing	R1	C&T, PPT, CD
27.	L27	Integration Testing	T1, R1	C&T, PPT, CD
28.	L28	Test Case Specification	R1, R2, WR1	FC, C&T, PPT, CD
29.	L29	Reliability Assessment	R1, R2, WR1	FC, C&T, PPT, CD
30.	L30	Validation & Verification	R1, R2, WR1	C&T, PPT, CD
31.	L31	Metrics, Monitoring & Control	R1, R2	C&T, PPT, CD, PS
32.	L32	Module III Revision / Practice	R1, R2, WR1	C&T, PPT, CD

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Module IV				
S. No.	**Lecture/ Tutorial No.**	**Topics to be Covered**	**Text/ References**	**Teaching Pedagogy***
33.	L33	Software Project Management Overview	R1	C&T, PPT, CD, PS
34.	L34	Project Scheduling	R1, WR1	C&T, PPT, CD, PS
35.	L35	Staffing	R1	C&T, PPT, CD, PS
36.	L36	Software Configuration Management	T1, T2, R1, WR1	C&T, Q, CD, PS
37.	L37	Quality Assurance	R1	C&T, Q, CD, PS
38.	L38	Project Monitoring	T1, T3, R1	C&T, Q, CD, PS
39.	L39	Static and Dynamic Models	T1, R1	C&T, Q, CD, PS

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Module V				
S. No.	**Lecture/ Tutorial No.**	**Topics to be Covered**	**Text/ References**	**Teaching Pedagogy***
40.	L40	Why Modeling UML Class Diagram	T1, T2, R1	C&T, Q, CD, PS
41.	L41	Interaction Diagrams (Collaboration & Sequence)	T1, T2, R1	C&T, Q, CD, PS
42.	L42	State Chart & Activity Diagram	T1, T3, R1	C&T, Q, CD, PS
43.	L43	Implementation Diagram & Final Revision	T1, R1	C&T, Q, CD, PS
44.	L44	Discussions on model questions	T1, T2, R1	C&T, Q, CD, PS

Text Books (T):

1. R.G. Pressman: Software Engineering,TMH.
2. CC. Ghezzi, M. Jazayeri and D. Mandrioli : Fundamentals of Software Engineering, PHI.
3. Pressman, Software Engineering: A practitioner's approach– (TMH)
4. Pankaj Jalote, Software Engineering- (Wiley-India)
5. N.S. Gill, Software Engineering – (Khanna Publishing House)
6. Rajib Mall, Software Engineering- (PHI)
7. Agarwal and Agarwal, Software Engineering – (PHI)
8. Sommerville, Software Engineering – Pearson
9. Martin L. Shooman, Software Engineering – TMH

Reference Books (R):

1. http://webfuse.cqu.edu.au/Courses/aut2001/95169/Extra_Examples/DFD_Example_1/
2. http://www.cs.unc.edu/~stotts/145/cocomo10.gif
3. www.his.sunderland.ac.uk/~cs0mel/Alb_Example.doc
4. Sabnam Sengupta, Swapan Bhattacharya, "Formalization of Functional Requirements of Software Development Process", In the Journal of Foundations of Computing and Decision Sciences (FCDS), Institute of Computing Science, Poznan University of Technology, pp 83-115, Poland Vol 33, Issue 1, 2008.

Web Resources (WR):

1. https://onlinecourses.nptel.ac.in/noc25_cs108/preview
2. https://www.coursera.org/courses?query=software%20engineering
3. https://ocw.mit.edu/search/?q=software%20engineering

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

***Teaching Pedagogy:**

S. No.	Abbreviation	Full Form
1.	C&T	Chalk & Talk
2.	PPT	Power Point Presentation
3.	CD	Classroom Discussions
4.	Q	Quiz
5.	PS	Problem Solving
6.	FC	Flipped Class

Assessment Methodology:

S. No.	Process	Assessment Type	CO Covered
1.	Direct	Presentation	CO1
2.		Report Writing	CO2
3.		Class Test1	CO1, CO2, CO3
4.		Class Test2	CO4, CO5
5.		Quiz	CO1, CO2, CO3, CO4, CO5
6.		Assignment	CO1, CO2, CO3, CO4, CO5
7.		End Semester University Exam	CO1, CO2, CO3, CO4, CO5
8.	Indirect	End Semester Students' Survey (CO Learning Assessment)	CO1, CO2, CO3, CO4, CO5

Innovations in Teaching/Learning/Assessment Processes:

- E-Learning material, demonstrations, field visits are extensively used.
- Incentive based class room interaction.
- Need based online sessions beyond class hours.
- Assessment process promotes self-learning, written and oral communication skills.

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Curricular Gap

Curricular Gap (Within Syllabus) and Mapping to PO/PSO:

S. No.	Description	Proposed Action	PO/PSO Mapped	Level of Mapping
1	Agile & Lean Methodologies (Scrum, Kanban, XP, SAFe etc.) instead of only traditional models	Letter to MAKAUT	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO10, PO12, PSO1, PSO2	3, 3, 2, 2, 2, 2, 2, 1, 1, 1, 1, 1

Curricular Gap (To Meet Industry/Professional Requirements) and Mapping to PO/PSO:

1.	Unit testing tools (JUnit, pytest)	Guest lecture/NPTEL	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO10, PO12, PSO1, PSO2	3, 3, 2, 2, 2, 2, 2, 1, 1, 1, 1, 1
2.	Operational & legal feasibility	Guest lecture/NPTEL	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO10, PO12, PSO1, PSO2	3, 3, 2, 2, 2, 2, 2, 1, 1, 1, 1, 1
3.	DevOps / Continuous Integration & Continuous Deployment (CI/CD) in modern software development	Guest lecture/NPTEL	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO10, PO12, PSO1, PSO2	3, 3, 2, 2, 2, 2, 2, 1, 1, 1, 1, 1

Proposed Actions: Assignment/Industry Visit/Guest Lecture/NPTEL etc.

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

.

COURSE DELIVERY DETAILS

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Institutional and Departmental Academic Calendar

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Course Delivery Details and Adherence to Academic Calendar

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** IT, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Topics to be Covered	Date of Lecture Planned	Adherence/ Remarks
1.	Familiarization of students with Institute and Department Vision, Mission, PEOs, POs, PSOs, COs and Course Overview	18-07-2024	As Planned
2.	Overview of System Analysis & Design Identify and describe a real-life system (e.g., ATM system)	23-07-24	As Planned
3.	Business System Concept Draw components of a business system (input-process-output)	25-07-24	As Planned
4.	System Development Life Cycle (SDLC) Create SDLC phases for a Library Management System	30-07-25	As Planned
5.	Waterfall Model Case study: When Waterfall is suitable	01-08-24	As Planned
6.	Spiral Model Compare Spiral vs Waterfall with example	08-08-24	As Planned
7.	Feasibility Analysis Overview Perform feasibility study for an Online Food Delivery system	09-08-24	As Planned
8.	Technical Feasibility Analyze technical needs for a mobile app	13-08-24	As Planned
9.	Cost-Benefit Analysis Prepare cost vs benefit table for a project	20-08-24	As Planned
10.	COCOMO Model Estimate effort using basic COCOMO (simple project)	20-08-24	As Planned
11.	Revision / Case Study on Module I Mini project discussion	29-08-24	As Planned
12.	System Design Overview	29-08-24	As Planned
13.	Context Diagram	03-09-24	As Planned
14.	Data Flow Diagram (DFD)	03-09-24	As Planned

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Topics to be Covered	Date of Lecture Planned	Adherence/ Remarks
15.	Problem Partitioning	10-09-24	As Planned
16.	Top-Down Design Approach	10-09-24	As Planned
17.	Bottom-Up Design Approach	12-09-24	As Planned
18.	Decision Tree & Decision Table	12-09-24	As Planned
19.	Structured English	19-09-24	As Planned
20.	Functional vs Object-Oriented Approach	19-09-24	As Planned
21.	Structured Programming	29-08-24	As Planned
22.	Object-Oriented Programming Concepts	29-08-24	As Planned
23.	Information Hiding	03-09-24	As Planned
24.	Software Reuse & Documentation	03-09-24	As Planned
25.	Testing Overview & Levels of Testing	24-09-24	As Planned
26.	Integration Testing	24-09-24	As Planned
27.	Test Case Specification	24-09-24	As Planned
28.	Reliability Assessment & Validation & Verification	22-10-24	As Planned
29.	Metrics, Monitoring & Control	22-10-24	As Planned
30.	Module III Revision / Practice	22-10-24	As Planned
31.	Software Project Management Overview	29-10-24	As Planned
32.	Project Scheduling	29-10-24	As Planned

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Topics to be Covered	Date of Lecture Planned	Adherence/ Remarks
33.	Staffing & Software Configuration Management	29-10-24	As Planned
34.	Quality Assurance	05-11-24	As Planned
35.	Project Monitoring	05-11-24	As Planned
36.	Static and Dynamic Models	05-11-24	As Planned
37.	Why Modeling UML	12-11-24	As Planned
38.	Use Case Diagram & Activity Diagram	12-11-24	As Planned
39.	Class Diagram	12-11-24	As Planned
40.	Interaction Diagrams (Collaboration & Sequence)	19-11-24	As Planned
41.	State Chart & Component Diagram	19-11-24	As Planned
42.	Implementation Diagram & Final Revision	19-11-24	As Planned
43.	Discussions on previous year questions	21-11-24	As Planned
44.	Discussions on model questions	21-11-24	As Planned

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

TEACHING PEDAGOGY

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Lecture Notes

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

List of Power Point Presentations

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

1. Overview of System analysis and Design
2. Introduction to Feasibility Analyses
3. Overview of Software Engineering
4. Software Engineering: From Principles to Tools
5. Software Qualities
6. Software Development Stages
7. Software Lifecycle Models
8. Software Development Lifecycle Waterfall Model
9. V-Model
10. Iterative Model
11. Phased Development Model
12. Incremental Model
13. Agile model
14. RAD (Rapid Application Development) model
15. Prototyping Model
16. Spiral development
17. Software Reliability
18. Reliability Models
19. Applications of Software Reliability
20. LOC & Function Point Analysis
21. Software Project Management
22. Software Cost Estimation
23. Software Testing and Quality Assurance
24. CMM
25. Decision Tree and table
26. Coding and documentation
27. UML Overview
28. Types of UML diagrams

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

List of Videos

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

1. https://www.youtube.com/watch?v=Ln_LP7c23WM

Lecture 01: Introduction- I.
Lecture 02: Introduction- II.
Lecture 03: Introduction- III.
Lecture 04: Introduction- IV.
Lecture 05: Introduction- V.
Lecture 06: Life Cycle Model.
Lecture 07: Life Cycle Model (Contd.).
Lecture 08: Waterfall Model.
Lecture 09: Waterfall Derivatives.
Lecture 10: Incremental Model.
Lecture 11: Evolutionary Model.
Lecture 12: Agile Model.
Lecture 13: Extreme Programming and Scrum.
Lecture 14: Scrum.
Lecture 15: Introduction to requirement specification.
Lecture 16: Requirement gathering and analysis.
Lecture 17: Functional requirements.
Lecture 18: Representation of complex programming logic.
Lecture 19: Design Fundamentals.
Lecture 20: Modular Design.
Lecture 21: Classification of Cohesion.
Lecture 22: Classification of Coupling.
Lecture 23: Introduction to structured analysis and structured design.
Lecture 24: Basics of Data Flow Diagrams (DFD).
Lecture 25: Developing DFD Model.
Lecture 26: Examples of DFD Model development.
Lecture 27: DFD Model - More Examples.
Lecture 28: Essentials of Structure Chart.
Lecture 29: Structure Chart Development.
Lecture 30: Structured Design Examples.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Lecture 31: Use Case Modelling.
Lecture 32: Factoring Use Cases.
Lecture 33: Overview of Class diagram.
Lecture 34: Inheritance relationship.
Lecture 35: Association relationship.
Lecture 36: Aggregation/ Composition and dependency relations.
Lecture 37: Interation Modelling.
Lecture 38: Development of Sequence diagrams.
Lecture 39: State-Machine diagram.
Lecture 40: An Object-Oriented design process.
Lecture 41: Domain Analysis.
Lecture 42: Examples of object-oriented design.
Lecture 43: Basic concepts in Testing-I.
Lecture 44: Basic concepts in Testing-II.
Lecture 45: Basic concepts in Testing-III.
Lecture 46: Unit testing strategies-I.
Lecture 47: Unit testing strategies-II.
Lecture 48: Equivalance Class Testing-I.
Lecture 49: Equivalance Class Testing-II.
Lecture 50: Special Value Testing.
Lecture 51: Combinatorial Testing.
Lecture 52: Decision Table Testing.
Lecture 53: Cause effect graphing.
Lecture 54: Pairwise Testing.
Lecture 55: White box Testing.
Lecture 56: Condition Testing.
Lecture 57: MC/DC Coverage.
Lecture 58: MC/DC Testing.
Lecture 59: Path Testing.Lecture 60: Dataflow and Mutation Testing.

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Quiz Questions

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Quiz Questions

Q1. Attributes of good software is _____

Q2. What is the appropriate pairing of items in the...

Q3. Which one of the following is NOT desired in a ...

Q4. Use case descriptions consist of ...

Q5. UML diagram that shows the interaction between ...

Q6. What is a Functional Requirement?

Q7. _____ is a software development ...

Q8. Software is defined as _____

Q9. Maintenance is the final phase in waterfall ...

Q10. What does SDLC stands for?

Q11. A step in waterfall model that involves a ...

Q12. What is the first step in the software ...

Q13. Which one of the following activities is not ...

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Solution of Quiz Questions

Q1. Attributes of good software is _____
Ans: Maintainability, Dependability & Security, Efficiency, Usability

Q2. What is the appropriate pairing of items in the...
Ans: Process – Activities; Product – Software (commonly correct pairing in SE context)

Q3. Which one of the following is NOT desired in a ...
Ans: High complexity (not desired in good software design)

Q4. Use case descriptions consist of ...
Ans: Actors, Scenarios, Preconditions, Postconditions

Q5. UML diagram that shows the interaction between ...
Ans: Sequence Diagram

Q6. What is a Functional Requirement?
Ans: A requirement that specifies what the system should do (its functions/behavior)

Q7. _____ is a software development ...
Ans: SDLC (Software Development Life Cycle)

Q8. Software is defined as _____
Ans: A collection of programs, data, and documentation

Q9. Maintenance is the final phase in waterfall ...
Ans: True

Q10. What does SDLC stands for?
Ans: Software Development Life Cycle

Q11. A step in waterfall model that involves a ...
Ans: Implementation (Coding phase)

Q12. What is the first step in the software ...
Ans: Requirement Analysis

Q13. Which one of the following activities is not ...
Ans: Manufacturing (not a software engineering activity)

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

PPREVIOUS YEARS' UNIVERSITY QUESTION PAPERS

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

LIST OF STUDENTS

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

List of Students

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name
1.	11500222001	Tanmay paul
2.	11500222002	Sneha debnath
3.	11500222003	Ananda datta
4.	11500222004	Nishita dey
5.	11500222005	Kritika laxmi
6.	11500222006	Yash gupta
7.	11500222007	Arka adhikari
8.	11500222008	Tanmay raj
9.	11500222009	Smarak basak
10.	11500222010	Diptesh bhattacharyya
11.	11500222011	Ambapali datta
12.	11500222012	Ritesh saw
13.	11500222013	Shirodhrit bhowmick
14.	11500222014	Subhojit pachhal
15.	11500222015	Israr arif
16.	11500222016	Mrityunjay aditya
17.	11500222017	Ritikesh singh
18.	11500222018	Arpana kumari
19.	11500222019	Suman jana
20.	11500222020	Madhumita maiti
21.	11500222021	Sarat menon
22.	11500222022	Rajib sant
23.	11500222023	Sattwik das
24.	11500222024	Vivek kumar
25.	11500222025	Saniya
26.	11500222026	Shubham kumar choudhary
27.	11500222027	Sudhanshu kumar
28.	11500222028	Pilli shreyash rao
29.	11500222029	Shatarupa sen
30.	11500222030	Prithiraj das
31.	11500222031	Srijita mallick

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

32.	11500222032	Sayan sen
33.	11500222033	Shiwaangee gupta
34.	11500222034	Akash kumar das
35.	11500222035	Ashmita pramanick
36.	11500222036	Amandeep singh
37.	11500222037	Adrija datta
38.	11500222038	Abhijeet kumar sah
39.	11500222039	Shovan rana
40.	11500222040	Piyush arora
41.	11500222041	Ayush ray
42.	11500222042	Mayukh kar
43.	11500222043	Sandhya prasad
44.	11500222044	Priya rajak
45.	11500222045	Ritam chatterjee
46.	11500222046	Gobinda mondal
47.	11500222047	Debarjun simlai
48.	11500222048	Saheli mondal
49.	11500222049	Anwesha pal
50.	11500222050	Dipanjan nandy
51.	11500222051	Disha soni
52.	11500222052	Sayan de
53.	11500222053	Archak nath
54.	11500222054	Sarthak chakraborty
55.	11500222055	Manik kumar mahato
56.	11500222058	Ranjan kumar mahato
57.	11500222059	Dhruba maitra
58.	11500222060	Ayan pramanik

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name
59.	11500222061	Aratrika samanta
60.	11500222062	Anubhav ishan
61.	11500222063	Aditya kumar sultania
62.	11500222064	Manish pandey
63.	11500222065	Jayasree saha
64.	11500222066	Sukesh bhunia
65.	11500222067	Sourav rai
66.	11500222068	Samrat das
67.	11500222069	Asad imam
68.	11500222070	Sanjib sen
69.	11500222071	Shubhadip koley
70.	11500222072	Md zeeshan mustafa
71.	11500222073	Souvik biswas
72.	11500222074	Soumyajit chowdhury
73.	11500222075	Arup jana
74.	11500222076	Ms mayank
75.	11500222077	Srijit pal
76.	11500222078	Shrimanta ghosh
77.	11500222079	Dipam dey
78.	11500222080	Neha jha
79.	11500222081	Sudipta mondal
80.	11500222083	Rahul das
81.	11500222084	Reezwan hosen khan
82.	11500222085	Gaurav thakur
83.	11500222086	Md tabrez shamim
84.	11500222087	Asmita saha
85.	11500222088	Manu singh
86.	11500222090	Arpit raj
87.	11500222091	Tamal majumdar
88.	11500222092	Sayantika manna
89.	11500222093	Ankita saha
90.	11500222095	Rohit raj
91.	11500222096	Rakesh de
92.	11500222097	Srijan sasmal
93.	11500222098	Rajarshi mondal
94.	11500222099	Snigdha ghosh
95.	11500222100	Sushovan barik

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

96.	11500222101	Chandan jha
97.	11500222102	Amitava roy
98.	11500222103	Sayan samanta
99.	11500222104	Rimjhim kumari
100.	11500222105	Vishal singh
101.	11500222106	Koushambha das
102.	11500222107	Maahi agarwal
103.	11500222108	Tusharkanti pal
104.	11500222109	Mridul panda
105.	11500222110	Kareena kumari
106.	11500222111	Abhradeep paul
107.	11500222112	Abhijan das
108.	11500222113	Arijit dawn
109.	11500222114	Asim das
110.	11500222115	Aashika kumari
111.	11500222116	Abhranil ray
112.	11500222117	Subhradeep basu
113.	11500222118	Tanujit banerjee
114.	11500222119	Kunal kumar verma
115.	11500223117	Ajanta ghosh
116.	11500223118	Alakendu ghosh
117.	11500223119	Argha ghosh
118.	11500223120	Arkadipta kundu
119.	11500223121	Barsha mandal
120.	11500223122	Bidisha bhattacharjee
121.	11500223123	Koustav dutta
122.	11500223124	Prithwis halder
123.	11500223125	Rahul dey
124.	11500223126	Saikat dasgupta
125.	11500223127	Samapti hazra
126.	11500223128	Samima afroj
127.	11500223129	Sangita gorai
128.	11500223131	Sourav sarkar
129.	11500223132	Suman mondal
130.	11500223133	Sumana giri
131.	11500223134	Upal pramanik
132.	11500223135	Youbaraj saha
133.	11500223136	Subrata bauri

_____ Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

DOCUMENTATION OF SLOW AND ADVANCED LEARNERS

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Quiz Questions for Identification of Slow Learners

Time Allotted: 20 minutes **Full Marks: 10**

Choose the ***correct alternatives*** of the following. 10×1=10

1. Software engineering is defined as
   a) Writing code only
   b) Systematic approach to software development
   c) Debugging programs
   d) Testing software only

2. Which of the following is NOT a software process activity?
   a) Specification
   b) Development
   c) Validation
   d) Manufacturing

3. The waterfall model is also known as
   a) Linear sequential model
   b) Incremental model
   c) Spiral model
   d) Agile model

4. Which phase comes after requirement analysis?
   a) Testing
   b) Design
   c) Maintenance
   d) Implementation

5. A functional requirement describes
   a) System performance
   b) System behavior
   c) System security
   d) System reliability

6. Which model is best suited for risk analysis?
   a) Waterfall model
   b) Spiral model
   c) V-model
   d) Prototype model

7. UML stands for
   a) Unified Modeling Language
   b) Universal Modeling Language
   c) Unified Machine Language
   d) User Modeling Language

8. Which diagram represents object interactions over time?
   a) Class diagram
   b) Use case diagram
   c) Sequence diagram
   d) Activity diagram

9. Software testing is mainly done to
   a) Increase complexity
   b) Find errors
   c) Write code
   d) Design system

10. Maintenance phase includes
   a) Coding
   b) Requirement gathering
   c) Bug fixing and updates
   d) Designing

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Solution of Quiz Questions for Identification of Slow Learners

1. b) Systematic approach to software development
2. d) Manufacturing
3. a) Linear sequential model
4. b) Design
5. b) System behavior
6. b) Spiral model
7. a) Unified Modeling Language
8. c) Sequence diagram
9. b) Find errors
10. c) Bug fixing and updates

1.

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Assessment of Quiz for Identification of Slow Learners

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**10**
1	11500222001	Tanmay paul	6
2	11500222002	Sneha debnath	7
3	11500222003	Ananda datta	6
4	11500222004	Nishita dey	8
5	11500222005	Kritika laxmi	4
6	11500222006	Yash gupta	9
7	11500222007	Arka adhikari	7
8	11500222008	Tanmay raj	4
9	11500222009	Smarak basak	3
10	11500222010	Diptesh bhattacharyya	8
11	11500222011	Ambapali datta	6
12	11500222012	Ritesh saw	3
13	11500222013	Shirodhrit bhowmick	10
14	11500222014	Subhojit pachhal	6
15	11500222015	Israr arif	2
16	11500222016	Mrityunjay aditya	4
17	11500222017	Ritikesh singh	10
18	11500222018	Arpana kumari	8
19	11500222019	Suman jana	8
20	11500222020	Madhumita maiti	4
21	11500222021	Sarat menon	10
22	11500222022	Rajib sant	10
23	11500222023	Sattwik das	9
24	11500222024	Vivek kumar	6
25	11500222025	Saniya	7
26	11500222026	Shubham kumar choudhary	7
27	11500222027	Sudhanshu kumar	3
28	11500222028	Pilli shreyash rao	6

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**10**
29.	11500222029	Shatarupa sen	9
30.	11500222030	Prithiraj das	8
31.	11500222031	Srijita mallick	9
32.	11500222032	Sayan sen	9
33.	11500222033	Shiwaangee gupta	7
34.	11500222034	Akash kumar das	8
35.	11500222035	Ashmita pramanick	6
36.	11500222036	Amandeep singh	8
37.	11500222037	Adrija datta	7
38.	11500222038	Abhijeet kumar sah	6
39.	11500222039	Shovan rana	8
40.	11500222040	Piyush arora	9
41.	11500222041	Ayush ray	9
42.	11500222042	Mayukh kar	7
43.	11500222043	Sandhya prasad	8
44.	11500222044	Priya rajak	6
45.	11500222045	Ritam chatterjee	8
46.	11500222046	Gobinda mondal	7
47.	11500222047	Debarjun simlai	5
48.	11500222048	Saheli mondal	8
49.	11500222049	Anwesha pal	9
50.	11500222050	Dipanjan nandy	9
51.	11500222051	Disha soni	7
52.	11500222052	Sayan de	8
53.	11500222053	Archak nath	6
54.	11500222054	Sarthak chakraborty	8
55.	11500222055	Manik kumar mahato	7
56.	11500222058	Ranjan kumar mahato	4
57.	11500222059	Dhruba maitra	7
58.	11500222060	Ayan pramanik	3

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			10
59.	11500222061	Aratrika samanta	8
60.	11500222062	Anubhav ishan	9
61.	11500222063	Aditya kumar sultania	9
62.	11500222064	Manish pandey	7
63.	11500222065	Jayasree saha	8
64.	11500222066	Sukesh bhunia	6
65.	11500222067	Sourav rai	5
66.	11500222068	Samrat das	4
67.	11500222069	Asad imam	8
68.	11500222070	Sanjib sen	9
69.	11500222071	Shubhadip koley	9
70.	11500222072	Md zeeshan mustafa	7
71.	11500222073	Souvik biswas	8
72.	11500222074	Soumyajit chowdhury	6
73.	11500222075	Arup jana	8
74.	11500222076	Ms mayank	5
75.	11500222077	Srijit pal	8
76.	11500222078	Shrimanta ghosh	9
77.	11500222079	Dipam dey	9
78.	11500222080	Neha jha	7
79.	11500222081	Sudipta mondal	8
80.	11500222083	Rahul das	4
81.	11500222084	Reezwan hosen khan	8
82.	11500222085	Gaurav thakur	9
83.	11500222086	Md tabrez shamim	9
84.	11500222087	Asmita saha	7
85.	11500222088	Manu singh	8
86.	11500222090	Arpit raj	6
87.	11500222091	Tamal majumdar	8
88.	11500222092	Sayantika manna	7

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			10
89.	11500222093	Ankita saha	8
90.	11500222095	Rohit raj	3
91.	11500222096	Rakesh de	8
92.	11500222097	Srijan sasmal	9
93.	11500222098	Rajarshi mondal	9
94.	11500222099	Snigdha ghosh	7
95.	11500222100	Sushovan barik	8
96.	11500222101	Chandan jha	6
97.	11500222102	Amitava roy	8
98.	11500222103	Sayan samanta	7
99.	11500222104	Rimjhim kumari	6
100.	11500222105	Vishal singh	8
101.	11500222106	Koushambha das	9
102.	11500222107	Maahi agarwal	9
103.	11500222108	Tusharkanti pal	4
104.	11500222109	Mridul panda	8
105.	11500222110	Kareena kumari	9
106.	11500222111	Abhradeep paul	9
107.	11500222112	Abhijan das	7
108.	11500222113	Arijit dawn	8
109.	11500222114	Asim das	6
110.	11500222115	Aashika kumari	3
111.	11500222116	Abhranil ray	8
112.	11500222117	Subhradeep basu	9
113.	11500222118	Tanujit banerjee	9
114.	11500222119	Kunal kumar verma	7
115.	11500223117	Ajanta ghosh	6
116.	11500223118	Alakendu ghosh	8
117.	11500223119	Argha ghosh	7
118.	11500223120	Arkadipta kundu	6
119.	11500223121	Barsha mandal	8
120.	11500223122	Bidisha bhattacharjee	9
121.	11500223123	Koustav dutta	9
122.	11500223124	Prithwis halder	7

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**10**
123.	11500223125	Rahul dey	8
124.	11500223126	Saikat dasgupta	9
125.	11500223127	Samapti hazra	9
126.	11500223128	Samima afroj	7
127.	11500223129	Sangita gorai	8
128.	11500223131	Sourav sarkar	6
129.	11500223132	Suman mondal	8
130.	11500223133	Sumana giri	7
131.	11500223134	Upal pramanik	6
132.	11500223135	Youbaraj saha	8
133.	11500223136	Subrata bauri	9
Threshold marks set by program			**60%**
Number of students scored more than/equal to threshold			**121**
Total number of students			**133**
Percentage of students scored more than/equal to threshold			**90.29%**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Sample Copies of Corrected Answer Scripts

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

List of Slow Learners

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

Parameter of Selection: Students who got less than 60% marks in Quiz taken three weeks after the commencement of the semester

S. No.	Univ. Roll No.	Student's Name
1	11500222003	Ananda datta
2	11500222007	Arka adhikari
3	11500222020	Madhumita maiti
4	11500222047	Debarjun simlai
5	11500222058	Ranjan kumar mahato
6	11500222060	Ayan pramanik
7	11500222067	Sourav rai
8	11500222068	Samrat das
9	11500222076	Ms mayank
10	11500222083	Rahul das
11	11500222095	Rohit raj
12	11500222108	Tusharkanti pal
13	11500222115	Aashika kumari
Number of students scored less than 60%		**13**
Total number of students		**133**
Percentage of Slow Learners		**9.77%**

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

List of Advanced Learners

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

Parameter of Selection: Students who belong to the top 10% SGPA category in the previous semester examination

S. No.	Univ. Roll No.	Student's Name
1	11500222070	Sanjib sen
2	11500222116	Abhranil ray
3	11500222032	Sayan sen
4	11500222099	Snigdha ghosh
5	11500222084	Reezwan hosen khan
6	11500223128	Samima afroj
7	11500222097	Srijan sasmal
8	11500222053	Archak nath
9	11500222106	Koushambha das
10	11500223125	Rahul dey
11	11500222086	Md tabrez shamim
12	11500223122	Bidisha bhattacharjee
13	11500223132	Suman mondal
14	11500222038	Abhijeet kumar sah
Number of students who are in the top 10% SGPA category		**14**
Total number of students		**133**
Percentage of Advanced Learners		**10.52%**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Time Table for Remedial Class for Slow Learners

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Notes for Slow and Advanced Learners

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Attendance Sheets for Slow Learners with Signature

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Quiz Questions for Slow Learners (Taken at the End of Remedial Class Schedule)

Time Allotted: 20 minutes **Full Marks: 10**

Choose the ***correct alternatives*** of the following. 10×1=10

1. Which of the following is a non-functional requirement?
   a) Login feature
   b) Payment processing
   c) Performance
   d) User registration

2. The primary goal of software engineering is to
a) Reduce cost only
b) Produce quality software
c) Increase complexity
d) Avoid documentation

3. Which of the following models is iterative in nature?
a) Waterfall model
b) Spiral model
c) Linear model
d) V-model

4. A feasibility study is conducted to
a) Write code
b) Test software
c) Check project viability
d) Design interface

5. Which one is not a UML diagram?
a) Class diagram
b) Sequence diagram
c) Flowchart
d) Use case diagram

6. Alpha testing is conducted by
a) End users
b) Developers
c) Clients
d) Testers in customer environment

7. Beta testing is performed at
a) Developer site
b) Client site
c) Testing lab
d) Design phase

8. Which of the following is a black-box testing technique?
a) Path testing
b) Loop testing
c) Equivalence partitioning
d) Statement coverage

9. Cohesion refers to
a) Interdependence between modules
b) Strength of relationship within a module
c) Coupling between systems
d) Code duplication

10. CASE tools are used for
a) Hardware design
b) Manual coding
c) Automating software development tasks
d) Networking

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Solution of Quiz Questions (Taken at the end of Remedial Class Schedule for Slow Learners)

1. c) Performance
2. b) Produce quality software
3. b) Spiral model
4. c) Check project viability
5. c) Flowchart
6. b) Developers
7. b) Client site
8. c) Equivalence partitioning
9. b) Strength of relationship within a module
10. c) Automating software development tasks

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Assessment of Quiz (Taken at the end of Remedial Class Schedule for Slow Learners)

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**10**
1	11500222003	Ananda datta	7
2	11500222007	Arka adhikari	8
3	11500222020	Madhumita maiti	3
4	11500222047	Debarjun simlai	10
5	11500222058	Ranjan kumar mahato	8
6	11500222060	Ayan pramanik	4
7	11500222067	Sourav rai	10
8	11500222068	Samrat das	7
9	11500222076	Ms mayank	6
10	11500222083	Rahul das	4
11	11500222095	Rohit raj	10
12	11500222108	Tusharkanti pal	10
13	11500222115	Aashika kumari	6
Threshold marks set by program			**60%**
Number of students scored more than/equal to threshold			**10**
Total number of students			**13**
Percentage of students scored more than/equal to threshold			**77%**

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Sample Copies of Corrected Answer Scripts

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

EVENTS ORGANIZED FOR CURRICULAR GAP

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Notice for Guest Lecture

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Attendance of Students with Signature

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

CONTINUOUS ASSESSMENTS, UNIVERSITY RESULTS AND END SEMESTER STUDENTS' SURVEY

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Topics for Presentation (on CO1)

Each group is advised to prepare a presentation with maximum10 slides. Individual groups will have to present their findings on the given topics within maximum 8 minutes followed by 2 minutes of discussion. Please follow the subgroups of your lab. Please also check your slot for presentation. Presentation will be taken in room no. C 502.

Group No.	Univ. Roll No.	Student's Name	Topic	Date and time of Presentation
1.	Tanmay Paul	11500222001	Systems Analysis and Design (SAD)	18.02.2025, 1.30-1.40 pm
	Sneha Debnath	11500222002		
	Annanda Datta	11500222003		
	Nishita Dey	11500222004		
	Kritika Laxmi	11500222005		
2.	Yash Gupta	11500222006	System Models	18.02.2025, 1.40-1.50 pm
	Arka Adhikari	11500222007		
	Tanmay Raj	11500222008		
	Smarak Basak	11500222009		
	Diptesh Bhattacharyya	11500222010		
3.	Ambapali Datta	11500222011	Why Model System Development Life Cycle (SDLC)? Phases of SDLC	18.02.2025, 1.50-2.00 pm
	Ritesh Saw	11500222012		
	Shirodhrit Bhowmick	11500222013		
	Subhojit Pachal	11500222014		
	Israr Arif	11500222015		
4.	Mrityunjay Aditya	11500222016	COCOMO model	18.02.2025, 2.00-2.10 pm
	Ritikesh Singh	11500222017		
	Arpana Kumari	11500222018		
	Suman Jana	11500222019		
	Madhumita Maiti	11500222020		
5.	Sarat Menon	11500222021	Role of System Analyst	19.02.2025, 1.30-1.40 pm
	Rajib Sant	11500222022		
	Sattwik Das	11500222023		
	Vivek Kumar	11500222024		
	Saniya	11500222025		
	Shubham kumar Choudhary	11500222026	Feasibility study	19.02.2025, 1.40-1.50 pm
	Sudhanshu kumar	11500222027		
	Pilli shreyash Rao	11500222028		
	Shatarupa Sen	11500222029		
	Prithviraj Das	11500222030		

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Group No.	Univ. Roll No.	Student's Name	Topic	Date and time of Presentation
6.	Srijita Mallick	11500222031	Requirement Analysis & Specifications	19.02.2025, 1.50-2.00 pm
	Sayan Sen	11500222032		
	Shiwaangee Gupta	11500222033		
	Akash Kumar Das	11500222034		
	Ashmita Pramanick	11500222035		
7.	Amandeep Singh	11500222036	Difference between software engineering and system engineering	19.02.2025, 2.00-2.10 pm
	Adrija Datta	11500222037		
	Abhijeet kumar sah	11500222038		
	Shovan Rana	11500222039		
	Piyush Arora	11500222040		
8.	Ayush Ray	11500222041	Waterfall Model	19.02.2025, 4.50-5.00 pm
	Mayuk Kar	11500222042		
	Sandhya Prasad	11500222043		
	Priya Rajak	11500222044		
	Ritam Chatterjee	11500222045		
9.	Gobindo Mondal	11500222046	V-Model	19.02.2025, 5.00-5.10 pm
	Debarjun Simlai	11500222047		
	Saheli Mandal	11500222048		
	Anwesha Pal	11500222049		
	Dipanjan Nandy	11500222050		
10.	Disha Soni	11500222051	Phased Development Model (Incremental Model)	19.02.2025, 5.10-5.20 pm
	Sayan De	11500222052		
	Archak Nath	11500222053		
	Sarthak Chakraborty	11500222054		
	Manik Kumar Mahato	11500222055		
11.	Ranjan Kumar Mahato	11500222058	Agile Model	19.02.2025, 5.20-5.30 pm
	Dhruba Maitra	11500222059		
	Ayan Pramanik	11500222060		
	Ajanta Ghosh	11500223117		
12.	Alakendu Ghosh	11500223118	Spiral Model	20.02.2025, 1.30-1.40 pm
	Arkadipta Kundu	11500223120		
	Bidisha Bhattacharjee	11500223122		
	Prithwis Halder	11500223124		
13.	Saikat Dasgupta	11500223126	Prototyping Model	20.02.2025, 1.40-1.50 pm
	Samapti Hazra	11500223127		
	Samima Afroj	11500223128		
	Sumana Giri	11500223133		

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Rubrics for Presentation

Appendix-D

RUBRICS FOR COMMUNICATION (WRITTEN & ORAL)

Component	Proficient	Acceptable	Needs Improvements
Written Communication	Report is well organized and clearly written. The underlying logic is clearly articulated and easy to follow. Words are chosen that precisely express the intended meaning and support reader comprehension. Diagrams or analyses enhance and clarify presentation of ideas. Sentences are grammatical and free from spelling errors.	Report is organized and clearly written for the most part. In some areas the logic or flow of ideas is difficult to follow. Words are well chosen with some minor exceptions. Diagrams are consistent with the text. Sentences are mostly grammatical and only a few spelling errors are present but they do not hinder the reader.	Report lacks an overall organization. Reader has to make considerable effort to understand the underlying logic and flow of ideas. Diagrams are absent or inconsistent with the text. Grammatical and spelling errors make it difficult for the reader to interpret the text in places.
Presentation Visual Aids	Slides are error-free and logically present the main components of the process and recommendations. Material is readable and the graphics highlight and support the main ideas.	Slides are error-free and logically present the main components of the process and recommendations. Material is mostly readable and graphics reiterate the main ideas.	Slides contain errors and lack a logical progression. Major aspects of the analysis or recommendations are absent. Diagrams or graphics are absent or confuse the audience.
Oral Presentation	Speakers are audible and fluent on their topic, and do not rely on notes to present or respond. Speakers respond accurately and appropriately to audience questions and comments.	Speakers are mostly audible and fluent on their topic, and require minimal referral to notes. Speakers respond to most questions accurately and appropriately.	Speakers are often inaudible or hesitant, often speaking in incomplete sentences. Speakers rely heavily on notes. Speakers have difficulty responding clearly and accurately to audience questions.
Body Language	Body language, as indicated by appropriate and meaningful gestures (e.g., drawing hands inward to convey contraction, moving arms up to convey lift, etc.) eye contact with audience, and movement, demonstrates a high level of comfort and connection with the audience.	Body language, as indicated by a slight tendency to repetitive and distracting gestures (e.g., tapping a pen, wringing hands, waving arms, clenching fists, etc.) and breaking eye contact with audience, demonstrates a slight discomfort with the audience.	Body language, as indicated by frequent, repetitive and distracting gestures, little or no audience eye-contact, and /or stiff posture and movement, indicate a high degree of discomfort interacting with audience.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Assessment of Presentation

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
1	11500222001	Tanmay paul	22
2	11500222002	Sneha debnath	21
3	11500222003	Ananda datta	21
4	11500222004	Nishita dey	22
5	11500222005	Kritika laxmi	22
6	11500222006	Yash gupta	23
7	11500222007	Arka adhikari	20
8	11500222008	Tanmay raj	13
9	11500222009	Smarak basak	23
10	11500222010	Diptesh bhattacharyya	22
11	11500222011	Ambapali datta	22
12	11500222012	Ritesh saw	24
13	11500222013	Shirodhrit bhowmick	21
14	11500222014	Subhojit pachhal	22
15	11500222015	Israr arif	24
16	11500222016	Mrityunjay aditya	22
17	11500222017	Ritikesh singh	20
18	11500222018	Arpana kumari	17
19	11500222019	Suman jana	22
20	11500222020	Madhumita maiti	20
21	11500222021	Sarat menon	23
22	11500222022	Rajib sant	21
23	11500222023	Sattwik das	24
24	11500222024	Vivek kumar	22
25	11500222025	Saniya	21
26	11500222026	Shubham kumar choudhary	23
27	11500222027	Sudhanshu kumar	22
28	11500222028	Pilli shreyash rao	21

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			25
29.	11500222029	Shatarupa sen	23
30.	11500222030	Prithiraj das	23
31.	11500222031	Srijita mallick	24
32.	11500222032	Sayan sen	23
33.	11500222033	Shiwaangee gupta	21
34.	11500222034	Akash kumar das	12
35.	11500222035	Ashmita pramanick	22
36.	11500222036	Amandeep singh	22
37.	11500222037	Adrija datta	23
38.	11500222038	Abhijeet kumar sah	21
39.	11500222039	Shovan rana	23
40.	11500222040	Piyush arora	21
41.	11500222041	Ayush ray	22
42.	11500222042	Mayukh kar	21
43.	11500222043	Sandhya prasad	21
44.	11500222044	Priya rajak	21
45.	11500222045	Ritam chatterjee	23
46.	11500222046	Gobinda mondal	21
47.	11500222047	Debarjun simlai	20
48.	11500222048	Saheli mondal	20
49.	11500222049	Anwesha pal	21
50.	11500222050	Dipanjan nandy	23
51.	11500222051	Disha soni	24
52.	11500222052	Sayan de	22
53.	11500222053	Archak nath	23
54.	11500222054	Sarthak chakraborty	24
55.	11500222055	Manik kumar mahato	17
56.	11500222058	Ranjan kumar mahato	17
57.	11500222059	Dhruba maitra	22
58.	11500222060	Ayan pramanik	16

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
59.	11500222061	Aratrika samanta	23
60.	11500222062	Anubhav ishan	17
61.	11500222063	Aditya kumar sultania	15
62.	11500222064	Manish pandey	15
63.	11500222065	Jayasree saha	23
64.	11500222066	Sukesh bhunia	23
65.	11500222067	Sourav rai	12
66.	11500222068	Samrat das	12
67.	11500222069	Asad imam	18
68.	11500222070	Sanjib sen	23
69.	11500222071	Shubhadip koley	23
70.	11500222072	Md zeeshan mustafa	18
71.	11500222073	Souvik biswas	20
72.	11500222074	Soumyajit chowdhury	22
73.	11500222075	Arup jana	18
74.	11500222076	Ms mayank	12
75.	11500222077	Srijit pal	23
76.	11500222078	Shrimanta ghosh	18
77.	11500222079	Dipam dey	22
78.	11500222080	Neha jha	20
79.	11500222081	Sudipta mondal	18
80.	11500222083	Rahul das	22
81.	11500222084	Reezwan hosen khan	22
82.	11500222085	Gaurav thakur	23
83.	11500222086	Md tabrez shamim	20
84.	11500222087	Asmita saha	20
85.	11500222088	Manu singh	13
86.	11500222090	Arpit raj	17

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			25
87.	11500222091	Tamal majumdar	20
88.	11500222092	Sayantika manna	22
89.	11500222093	Ankita saha	20
90.	11500222095	Rohit raj	18
91.	11500222096	Rakesh de	20
92.	11500222097	Srijan sasmal	20
93.	11500222098	Rajarshi mondal	23
94.	11500222099	Snigdha ghosh	12
95.	11500222100	Sushovan barik	20
96.	11500222101	Chandan jha	22
97.	11500222102	Amitava roy	17
98.	11500222103	Sayan samanta	23
99.	11500222104	Rimjhim kumari	22
100.	11500222105	Vishal singh	20
101.	11500222106	Koushambha das	20
102.	11500222107	Maahi agarwal	22
103.	11500222108	Tusharkanti pal	20
104.	11500222109	Mridul panda	23
105.	11500222110	Kareena kumari	23
106.	11500222111	Abhradeep paul	22
107.	11500222112	Abhijan das	23
108.	11500222113	Arijit dawn	17
109.	11500222114	Asim das	20
110.	11500222115	Aashika kumari	20
111.	11500222116	Abhranil ray	22
112.	11500222117	Subhradeep basu	23
113.	11500222118	Tanujit banerjee	15
114.	11500222119	Kunal kumar verma	20
115.	11500223117	Ajanta ghosh	23
116.	11500223118	Alakendu ghosh	22
117.	11500223119	Argha ghosh	23
118.	11500223120	Arkadipta kundu	22
119.	11500223121	Barsha mandal	22

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
120.	11500223122	Bidisha bhattacharjee	24
121.	11500223123	Koustav dutta	22
122.	11500223124	Prithwis halder	20
123.	11500223125	Rahul dey	18
124.	11500223126	Saikat dasgupta	23
125.	11500223127	Samapti hazra	24
126.	11500223128	Samima afroj	22
127.	11500223129	Sangita gorai	22
128.	11500223131	Sourav sarkar	22
129.	11500223132	Suman mondal	20
130.	11500223133	Sumana giri	23
131.	11500223134	Upal pramanik	20
132.	11500223135	Youbaraj saha	19
133.	11500223136	Subrata bauri	22
Threshold marks set by program			**60%**
Number of students scored more than/equal to threshold			**126**
Total number of students			**133**
Percentage of students scored more than/equal to threshold			**94.73%**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Sample Corrected Copies of Presentation

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Topics for Report Writing (on CO2)

Group No.	Univ. Roll No.	Student's Name	Topic
1.	Tanmay Paul	11500222001	SDLC (Software Development Life Cycle) (At least 3 models)
	Sneha Debnath	11500222002	
	Annanda Datta	11500222003	
	Nishita Dey	11500222004	
	Kritika Laxmi	11500222005	
2.	Yash Gupta	11500222006	Procedural vs Object oriented requirement analysis
	Arka Adhikari	11500222007	
	Tanmay Raj	11500222008	
	Smarak Basak	11500222009	
	Diptesh Bhattacharyya	11500222010	
3.	Ambapali Datta	11500222011	Modularization in Software Engineering
	Ritesh Saw	11500222012	
	Shirodhrit Bhowmick	11500222013	
	Subhojit Pachal	11500222014	
	Israr Arif	11500222015	
4.	Mrityunjay Aditya	11500222016	Decision tree and table
	Ritikesh Singh	11500222017	
	Arpana Kumari	11500222018	
	Suman Jana	11500222019	
	Madhumita Maiti	11500222020	
5.	Sarat Menon	11500222021	Software Metrics and Measures
	Rajib Sant	11500222022	
	Sattwik Das	11500222023	
	Vivek Kumar	11500222024	
	Saniya	11500222025	
	Shubham kumar Choudhary	11500222026	Verification, validation, test case, test suite
	Sudhanshu kumar	11500222027	
	Pilli shreyash Rao	11500222028	
	Shatarupa Sen	11500222029	
	Prithviraj Das	11500222030	

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Group No.	Univ. Roll No.	Student's Name	Topic
6.	Srijita Mallick	11500222031	Software Reliability & Feasibility Study
	Sayan Sen	11500222032	
	Shiwaangee Gupta	11500222033	
	Akash Kumar Das	11500222034	
	Ashmita Pramanick	11500222035	
7.	Amandeep Singh	11500222036	Software Project Management
	Adrija Datta	11500222037	
	Abhijeet kumar sah	11500222038	
	Shovan Rana	11500222039	
	Piyush Arora	11500222040	
8.	Ayush Ray	11500222041	Coupling and Cohesion
	Mayuk Kar	11500222042	
	Sandhya Prasad	11500222043	
	Priya Rajak	11500222044	
	Ritam Chatterjee	11500222045	
9.	Gobindo Mondal	11500222046	Black Box and white box testing
	Debarjun Simlai	11500222047	
	Saheli Mandal	11500222048	
	Anwesha Pal	11500222049	
	Dipanjan Nandy	11500222050	
10.	Disha Soni	11500222051	Integration and Acceptance testing
	Sayan De	11500222052	
	Archak Nath	11500222053	
	Sarthak Chakraborty	11500222054	
	Manik Kumar Mahato	11500222055	
11.	Ranjan Kumar Mahato	11500222058	Software Quality & Maintenance
	Dhruba Maitra	11500222059	
	Ayan Pramanik	11500222060	
	Ajanta Ghosh	11500223117	
12.	Alakendu Ghosh	11500223118	Software Testing
	Arkadipta Kundu	11500223120	
	Bidisha Bhattacharjee	11500223122	
	Prithwis Halder	11500223124	
13.	Saikat Dasgupta	11500223126	Class diagram with case study
	Samapti Hazra	11500223127	
	Samima Afroj	11500223128	
	Sumana Giri	11500223133	

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

General Instruction:
Prepare Report of around ten pages for each topic. The format of the report is attached.

Last date of the submission of report is 04/03/25.

Please upload pdf formats of report on Moodle.

Report format (Recommended)

Sections:

- Title
- Abstract
- Introduction
- Use Case Diagram (if any)
- Working principle
- Applications
- Conclusions
- References

Style:
Times New Roman, 1.5 spaced, using 12-point font, margins should be one inch on each side (justify; align text to both the left and right margins).

Page limit:
Around 10 pages.

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Rubrics for Report Writing

Rubrics for Report writing & Assignments for CA2

Component	Proficient	Acceptable	Needs Improvements
Written Communication	Report is well organized and clearly written. The underlying logic is clearly articulated and easy to follow. Words are chosen that precisely express the intended meaning and support reader comprehension. Diagrams or analyses enhance and clarify presentation of ideas. Sentences are grammatical and free from spelling errors.	Report is organized and clearly written for the most part. In some areas the logic or flow of ideas is difficult to follow. Words are well chosen with some minor exceptions. Diagrams are consistent with the text. Sentences are mostly grammatical and only a few spelling errors are present but they do not hinder the reader.	Report lacks an overall organization. Reader has to make considerable effort to understand the underlying logic and flow of ideas. Diagrams are absent or inconsistent with the text. Grammatical and spelling errors make it difficult for the reader to interpret the text in places.

PI Code	PI	Marks	Very Poor Up to 20%	Poor Up to 40%	Average Up to 60%	Good Up to 80%	Very good Up to 100%
2.1.2	Identify engineering systems, variables, and parameters to solve the problems - IA	02	Engineering systems are not identified. Variables, and parameters to solve the problems are not defined	Engineering systems are identified but not clear. Variables, and parameters to solve the problems are not defined	Engineering systems are clear. Variables, and parameters to solve the problems are not defined	Engineering systems are identified. Variables, and parameters to solve the problems are partially defined	Engineering systems are identified. Variables, and parameters to solve the problems are completely defined
9.3.1	Present results as a team, with smooth integration of contributions from all individual efforts – GA + IA	03	No Contribution from an individual to a team	Contributions from an individual to a team is minimal	Contributions from an individual to a team is moderate	A contribution from an individual to a team is good but not well groomed in team.	Contribution from an individual to a team is good and results in an integrated team presentation.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Assessment of Report Writing

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
1	11500222001	Tanmay paul	23
2	11500222002	Sneha debnath	23
3	11500222003	Ananda datta	22
4	11500222004	Nishita dey	21
5	11500222005	Kritika laxmi	23
6	11500222006	Yash gupta	23
7	11500222007	Arka adhikari	23
8	11500222008	Tanmay raj	23
9	11500222009	Smarak basak	23
10	11500222010	Diptesh bhattacharyya	24
11	11500222011	Ambapali datta	25
12	11500222012	Ritesh saw	25
13	11500222013	Shirodhrit bhowmick	23
14	11500222014	Subhojit pachhal	23
15	11500222015	Israr arif	22
16	11500222016	Mrityunjay aditya	25
17	11500222017	Ritikesh singh	23
18	11500222018	Arpana kumari	25
19	11500222019	Suman jana	23
20	11500222020	Madhumita maiti	23
21	11500222021	Sarat menon	23
22	11500222022	Rajib sant	23
23	11500222023	Sattwik das	25
24	11500222024	Vivek kumar	25
25	11500222025	Saniya	23
26	11500222026	Shubham kumar choudhary	25
27	11500222027	Sudhanshu kumar	23
28	11500222028	Pilli shreyash rao	23

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
	11500222029	Shatarupa sen	23
	11500222030	Prithiraj das	25
	11500222031	Srijita mallick	25
	11500222032	Sayan sen	22
	11500222033	Shiwaangee gupta	23
	11500222034	Akash kumar das	20
	11500222035	Ashmita pramanick	23
	11500222036	Amandeep singh	22
	11500222037	Adrija datta	23
	11500222038	Abhijeet kumar sah	23
	11500222039	Shovan rana	22
	11500222040	Piyush arora	23
	11500222041	Ayush ray	23
	11500222042	Mayukh kar	21
	11500222043	Sandhya prasad	23
	11500222044	Priya rajak	23
	11500222045	Ritam chatterjee	23
	11500222046	Gobinda mondal	23
	11500222047	Debarjun simlai	21
	11500222048	Saheli mondal	23
	11500222049	Anwesha pal	25
	11500222050	Dipanjan nandy	22
	11500222051	Disha soni	23
	11500222052	Sayan de	22
	11500222053	Archak nath	22
	11500222054	Sarthak chakraborty	23
	11500222055	Manik kumar mahato	25
	11500222058	Ranjan kumar mahato	22
	11500222059	Dhruba maitra	25
	11500222060	Ayan pramanik	22

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
	11500222061	Aratrika samanta	20
	11500222062	Anubhav ishan	18
	11500222063	Aditya kumar sultania	15
	11500222064	Manish pandey	15
	11500222065	Jayasree saha	15
	11500222066	Sukesh bhunia	13
	11500222067	Sourav rai	8
	11500222068	Samrat das	10
	11500222069	Asad imam	15
	11500222070	Sanjib sen	17
	11500222071	Shubhadip koley	15
	11500222072	Md zeeshan mustafa	22
	11500222073	Souvik biswas	22
	11500222074	Soumyajit chowdhury	22
	11500222075	Arup jana	15
	11500222076	Ms mayank	8
	11500222077	Srijit pal	15
	11500222078	Shrimanta ghosh	10
	11500222079	Dipam dey	15
	11500222080	Neha jha	15
	11500222081	Sudipta mondal	10
	11500222083	Rahul das	22
	11500222084	Reezwan hosen khan	18
	11500222085	Gaurav thakur	15
	11500222086	Md tabrez shamim	12
	11500222087	Asmita saha	20
	11500222088	Manu singh	8
	11500222090	Arpit raj	8

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	20
Max Marks →			**25**
	11500222091	Tamal majumdar	15
	11500222092	Sayantika manna	15
	11500222093	Ankita saha	17
	11500222095	Rohit raj	8
	11500222096	Rakesh de	15
	11500222097	Srijan sasmal	15
	11500222098	Rajarshi mondal	10
	11500222099	Snigdha ghosh	15
	11500222100	Sushovan barik	15
	11500222101	Chandan jha	13
	11500222102	Amitava roy	13
	11500222103	Sayan samanta	12
	11500222104	Rimjhim kumari	15
	11500222105	Vishal singh	23
	11500222106	Koushambha das	23
	11500222107	Maahi agarwal	15
	11500222108	Tusharkanti pal	15
	11500222109	Mridul panda	12
	11500222110	Kareena kumari	23
	11500222111	Abhradeep paul	23
	11500222112	Abhijan das	20
	11500222113	Arijit dawn	20
	11500222114	Asim das	23
	11500222115	Aashika kumari	20
	11500222116	Abhranil ray	22
	11500222117	Subhradeep basu	23
	11500222118	Tanujit banerjee	15
	11500222119	Kunal kumar verma	20
	11500223117	Ajanta ghosh	25
	11500223118	Alakendu ghosh	25
	11500223119	Argha ghosh	15
	11500223120	Arkadipta kundu	23
	11500223121	Barsha mandal	12

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
	11500223122	Bidisha bhattacharjee	20
	11500223123	Koustav dutta	12
	11500223124	Prithwis halder	23
	11500223125	Rahul dey	15
	11500223126	Saikat dasgupta	22
	11500223127	Samapti hazra	25
	11500223128	Samima afroj	20
	11500223129	Sangita gorai	12
	11500223131	Sourav sarkar	15
	11500223132	Suman mondal	17
	11500223133	Sumana giri	25
	11500223134	Upal pramanik	20
	11500223135	Youbaraj saha	15
	11500223136	Subrata bauri	17
Threshold marks set by program			**60%**
Number of students scored more than/equal to threshold			**115**
Total number of students			**133**
Percentage of students scored more than/equal to threshold			**86.46%**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Sample Copies of Report Writing

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

B. P. PODDAR INSTITUTE OF MANAGEMENT & TECHNOLOGY

Class Test 1 / B.TECH/IT (NEW)/SEM 5/ESC 501/2024-25

SOFTWARE ENGINEERING

Time Allotted: 50 minutes **Full Marks: 25**

OUTCOME BASED EDUCATION (OBE)

Question No.	Knowledge Domain & Level	Allotted Marks	CO
1(a–e)	Understand (L2)	5	CO1
2	Analyze (L4)	5	CO1
3	Understand (L2)	5	CO1
4a	Remember (L1)	2	CO2
4b	Apply (L3)	3	CO3
5	Apply (L3)	5	CO3
6a	Understand (L2)	2	CO1
6b	Apply (L3)	3	CO3

Group-A

(Multiple Choice Type Questions)

Answer the following questions (any five): **5×1=5**

1 (i) …….is a graphical notation for depicting process design.

(ii) A decision table should be used.....

(iii) Potential risks are best directed by_____ model.

(iv) ……. model put much more emphasis on reusability.

(v) When can white-box testing be started?

A) After SRS Creation B) After Installation C) After Programming D) After Designing

(vi) Which is the following is the most important feature of the spiral model?

A) Efficiency management B) Time management C) Risk Management D) Quality management

(vii)Which of the following is not considered as an option for achieving reliable cost and effort estimation?

A) The ability to translate the size estimate into human effort, calendar time, and dollars

B) Use relatively simple decomposition techniques to generate project cost and effort estimates.

C) Base estimates on similar projects that have already been completed

D) Use one or more empirical models for software cost and effort estimation

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Group-B (Short Answer Type Questions)

Answer any four of the following: **4×5=20**

2. Explain briefly how spiral model address the shortcomings of waterfall model. Mention the strengths and weaknesses of the spiral model. **(5)**

3. Define capability and Key process areas of Capability Maturity model (CMM). What are the quantities that determine the degree of capability of a software reliability model? **(5)**

4. (a) Explain the development phases of the detailed COCOMO model. **(2)**

(b) A company needs to develop digital signal processing software for one of its newest inventions. The software is expected to have 40000 lines of code. The company needs to determine the effort in person-months needed to develop this software using the basic COCOMO model. The multiplicative factor for this model is given as 2.8 for the software development on embedded systems, while the exponentiation factor is given as 1.20. What is the estimated effort in person-months? **(3)**

5. The availability of a complex software is 90%. Its Mean Time Between Failure (MTBF) is 200 days. Because of the critical nature of the usage, the organization deploying the software further enhanced it to obtain an availability of 95%. In the process, the Mean Time To Repair (MTTR) increased by 5 days. What is the MTBF of the enhanced software? **(5)**

6. a) Why is SRS also known as the black-box specification of system? Differentiate between functional testing and structural testing. **(2)**

b) Define the failure intensity of the Basic model. Assume a program will experience a total of 200 failures. Initial failure intensity is 16 failure/ CPU hr. It has now experienced 50 failures. Determine the following after specifying the formula a. Current failure intensity b. Decrement of failure intensity c. Failure intensity at 100 CPU hr. **(3)**

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Question–CO Mapping Table (CO1 to CO3)

Question No.	Question Description	Mapped CO	Justification
1(a–e)	Overview of System Analysis & Design, Business System Concept, System Development Life Cycle, Waterfall Model Spiral Model, Feasibility Analysis, Technical Feasibility, Cost- Benefit Analysis, COCOMO model.	**CO1**	These questions require understanding SDLC model and feasibility study of the software and identifying cost estimation model.
2	Explain briefly how spiral model address the shortcomings of waterfall model. Mention the strengths and weaknesses of the spiral model.	**CO1**	Understand student's comprehension of lifecycle evolution from the Waterfall Model to the Spiral Model, including comparative analysis and risk management concepts.
3	Define capability and Key process areas of Capability Maturity model (CMM). What are the quantities that determine the degree of capability of a software reliability model?	**CO2**	Remember the concepts of software process maturity and reliability metrics.
4a	Explain the development phases of the detailed COCOMO model.	**CO2**	Develop a software focuses on explaining the development phases of the COCOMO estimation model.
4b	A company needs to develop digital signal processing software for one of its newest inventions. The software is expected to have 40000 lines of code. The company needs to determine the effort in person-months needed to develop this software using the basic COCOMO model. The multiplicative factor for this model is given as 2.8 for the software development on embedded systems, while the exponentiation	**CO3**	Apply the Basic COCOMO estimation model to calculate development effort, which supports proper planning and management of software quality activities at the organizational level.

	factor is given as 1.20. What is the estimated effort in person-months?		
5	The availability of a complex software is 90%. Its Mean Time Between Failure (MTBF) is 200 days. Because of the critical nature of the usage, the organization deploying the software further enhanced it to obtain an availability of 95%. In the process, the Mean Time To Repair (MTTR) increased by 5 days. What is the MTBF of the enhanced software?	**CO3**	Apply the concepts of reliability and availability formulas to quantitatively evaluate and improve software quality at the system and organizational level. Student can able to demonstrate practical application of quality assurance metrics aligned with Bloom's Level 3 (Apply).
6a	Why is SRS also known as the black-box specification of system? Differentiate between functional testing and structural testing.	**CO3**	Focuses on the mechanisms of black-box testing. Require understanding the types of testing and focuses on the aspects of a software program that are tested during the following Testing processes.
6b	Define the failure intensity of the Basic model. Assume a program will experience a total of 200 failures. Initial failure intensity is 16 failure/ CPU hr. It has now experienced 50 failures. Determine the following after specifying the formula a. Current failure intensity b. Decrement of failure intensity c. Failure intensity at 100 CPU hr.	**CO3**	Apply a software reliability growth model and compute failure intensity using quantitative formulas, which reflects practical application of quality assurance techniques.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Scheme of Evaluation of Class Test 1

Q.No.	Question	Marks Awarded	CO Mapping	Cognitive Level	Marks (M) to be awarded
1(a–e)	Overview of System Analysis & Design , Business System Concept, System Development Life Cycle, Waterfall Model Spiral Model, Feasibility Analysis, Technical Feasibility, Cost- Benefit Analysis, COCOMO model.	1	CO1	Understand	If Correct M=1
2	Explain briefly how spiral model address the shortcomings of waterfall model. Mention the strengths and weaknesses of the spiral model.	1	CO1	Understand	If Correct M=5
3	Define capability and Key process areas of Capability Maturity model (CMM). What are the quantities that determine the degree of capability of a software reliability model?	1	CO1	Understand	If Correct M=5
4a	Explain the development phases of the detailed COCOMO model.	1	CO2	Create	If Correct M=2
4b	A company needs to develop digital signal processing software for one of its newest inventions. The software is expected to have 40000 lines of code. The company needs to determine the effort in person-months needed to develop this software using the basic COCOMO model. The multiplicative factor for this model is given as 2.8 for the software	1	CO3	Apply	If Correct M=3

	development on embedded systems, while the exponentiation factor is given as 1.20. What is the estimated effort in person-months?				
5	The availability of a complex software is 90%. Its Mean Time Between Failure (MTBF) is 200 days. Because of the critical nature of the usage, the organization deploying the software further enhanced it to obtain an availability of 95%. In the process, the Mean Time To Repair (MTTR) increased by 5 days. What is the MTBF of the enhanced software?	1+2+1+1	CO3	Apply	If Correct M=5
6a	Why is SRS also known as the black-box specification of system? Differentiate between functional testing and structural testing.	2+3	CO1	Apply	If Correct M=2
6b	Define the failure intensity of the Basic model. Assume a program will experience a total of 200 failures. Initial failure intensity is 16 failure/ CPU hr. It has now experienced 50 failures. Determine the following after specifying the formula a. Current failure intensity b. Decrement of failure intensity c. Failure intensity at 100 CPU hr.	1+2+2	CO3	Apply	If Correct M=3

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Model Answer of Class Test 1

Group-A: Very Short Answer Questions (1×5 = 5)

1. (i) Structure Chart is a graphical notation for depicting process design.
   (ii) A decision table should be used when there are complex combinations of conditions and actions.
   (iii) Potential risks are best directed by Spiral Model.
   (iv) Object-Oriented Model puts much more emphasis on reusability.
   (v) White-box testing can be started after Programming. (Correct Answer: C)
   (vi) Most important feature of Spiral Model: Risk Management. (Correct Answer: C)
   (vii) Not considered as estimation option: The ability to translate the size estimate into human effort, calendar time, and dollars.

Group-B: Short Answer Type Questions (4×5 = 20)

2. Explain briefly how spiral model address the shortcomings of waterfall model. Mention the strengths and weaknesses of the spiral model. (5)
   - Handles changing requirements through iterative cycles.
   - Emphasizes risk analysis in every phase.
   - Allows customer feedback at each iteration.
   Strengths: Risk-focused, flexible, suitable for large projects.
   Weaknesses: Expensive, complex, requires risk expertise.

3. Define capability and Key process areas of Capability Maturity model (CMM). What are the quantities that determine the degree of capability of a software reliability model? (5)

   Capability: Ability of an organization to consistently develop high-quality software.
   Key Process Areas (KPA): Requirements Management, Project Planning, Quality Assurance, Configuration Management, Process Improvement.
   Reliability Quantities: Failure Intensity, MTBF, MTTR, Availability.

4. (a) Explain the development phases of the detailed COCOMO model. (2)
   (b) A company needs to develop digital signal processing software for one of its newest inventions. The software is expected to have 40000 lines of code. The company needs to determine the effort in person-months needed to develop this software using the basic COCOMO model. The multiplicative factor for this model is given as 2.8 for the software development on embedded systems, while the exponentiation factor is given as 1.20. What is the estimated effort in person-months? (3)

Development Phases of Detailed COCOMO: Product Design, Detailed Design, Coding & Unit Testing, Integration & Testing.
Effort Estimation:
Given: LOC = 40000 (40 KLOC), a = 2.8, b = 1.20
Effort = a × (KLOC)^b
Effort = 2.8 × (40)^1.20 ≈ 234 Person-Months

5. The availability of a complex software is 90%. Its Mean Time between Failure (MTBF) is 200 days. Because of the critical nature of the usage, the organization deploying the software further enhanced it to obtain an availability of 95%. In the process, the Mean Time to Repair (MTTR) increased by 5 days. What is the MTBF of the enhanced software? (5)

   Availability = MTBF / (MTBF + MTTR)
   Initial MTTR ≈ 22.22 days
   New MTTR = 27.22 days
   New MTBF ≈ 517 days

6. a) Why is SRS also known as the black-box specification of system? Differentiate between functional testing and structural testing. (2)
   b) Define the failure intensity of the Basic model. Assume a program will experience a total of 200 failures. Initial failure intensity is 16 failure/ CPU hr. It has now experienced 50 failures. Determine the following after specifying the formula a. Current failure intensity b. Decrement of failure intensity c. Failure intensity at 100 CPU hr. (3)

   SRS is called black-box specification because it specifies what the system should do, not how it is implemented.
   Functional Testing: Tests functionality based on requirements.
   Structural Testing: Tests internal code structure (white-box testing).
   Failure Intensity Formula: $\lambda = \lambda 0 (1 - \mu / V)$
   Current failure intensity = 12 failures/CPU hr

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Assessment of Class Test 1

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			5	5	5	5	5	25
1.	11500222001	Tanmay paul	4	2	5			11
2.	11500222002	Sneha debnath	3	3	5			11
3.	11500222003	Ananda datta	3	0	10			13
4.	11500222004	Nishita dey	2			1	8	11
5.	11500222005	Kritika laxmi	4	1	8			17
6.	11500222006	Yash gupta	4	0	5			9
7.	11500222007	Arka adhikari	3	0	10			13
8.	11500222008	Tanmay raj	3		3	1		7
9.	11500222009	Smarak basak	4		0	12		16
10.	11500222010	Diptesh bhattacharyya	3		5	14		22
11.	11500222011	Ambapali datta	4	3	8			15
12.	11500222012	Ritesh saw	5	0	12			24
13.	11500222013	Shirodhrit bhowmick	3		3	9		15
14.	11500222014	Subhojit pachhal	5		5	14		24
15.	11500222015	Israr arif	3		3	15		21
16.	11500222016	Mrityunjay aditya	2		3	6		11
17.	11500222017	Ritikesh singh	3	2	9			14
18.	11500222018	Arpana kumari	3	2	6			11
19.	11500222019	Suman jana	4	3	9			16
20.	11500222020	Madhumita maiti	5	3	11			19
21.	11500222021	Sarat menon	5			0	9	14
22.	11500222022	Rajib sant	3			0	6	9
23.	11500222023	Sattwik das	5	5	11			21
24.	11500222024	Vivek kumar	6	4	9			19
25.	11500222025	Saniya	3	3	10			16
26.	11500222026	Shubham kumar choudhary	5			4	6	15
27.	11500222027	Sudhanshu kumar	3	0	10			13
28.	11500222028	Pilli shreyash rao	4	1	7			12

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			5	5	5	5	5	25
29.	11500222029	Shatarupa sen	4	5	6			15
30.	11500222030	Prithiraj das	5	4	7			16
31.	11500222031	Srijita mallick	4			5	9	18
32.	11500222032	Sayan sen	4			1	11	16
33.	11500222033	Shiwaangee gupta	6	2	9			17
34.	11500222034	Akash kumar das	4	3	11			18
35.	11500222035	Ashmita pramanick	6		2	9		17
36.	11500222036	Amandeep singh	3		5	7		15
37.	11500222037	Adrija datta	3		2	14		19
38.	11500222038	Abhijeet kumar sah	4	3	8			15
39.	11500222039	Shovan rana	6	3	10			19
40.	11500222040	Piyush arora	4		3	9		16
41.	11500222041	Ayush ray	6	0	5			11
42.	11500222042	Mayukh kar	3	4	10			17
43.	11500222043	Sandhya prasad	4	3	9			16
44.	11500222044	Priya rajak	2			3	11	16
45.	11500222045	Ritam chatterjee	2			3	12	17
46.	11500222046	Gobinda mondal	2			3	9	14
47.	11500222047	Debarjun simlai	5	0	13			18
48.	11500222048	Saheli mondal	4	3	9			16
49.	11500222049	Anwesha pal	4	5	13			22
50.	11500222050	Dipanjan nandy	3		4	9		16
51.	11500222051	Disha soni	3		3	10		16
52.	11500222052	Sayan de	2	2	7			11
53.	11500222053	Archak nath	5	4	12			21
54.	11500222054	Sarthak chakraborty	4	4	11			19
55.	11500222055	Manik kumar mahato	3			3	9	15
56.	11500222058	Ranjan kumar mahato	3			0	14	17

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			5	5	5	5	5	25
57.	11500222059	Dhruba maitra	3	3	5			11
58.	11500222060	Ayan pramanik	3	2	8			13
59.	11500222061	Aratrika samanta	4		2	5		11
60.	11500222062	Anubhav ishan	3		3	5		11
61.	11500222063	Aditya kumar sultania	3		0	10		13
62.	11500222064	Manish pandey	2		1	8		11
63.	11500222065	Jayasree saha	4	1	8			13
64.	11500222066	Sukesh bhunia	4	0	5			9
65.	11500222067	Sourav rai	3	0	10			13
66.	11500222068	Samrat das	3			3	1	7
67.	11500222069	Asad imam	4			0	12	16
68.	11500222070	Sanjib sen	3	5	14			22
69.	11500222071	Shubhadip koley	4	3	8			15
70.	11500222072	Md zeeshan mustafa	5	0	12			17
71.	11500222073	Souvik biswas	3		3	9		15
72.	11500222074	Soumyajit chowdhury	5		5	14		24
73.	11500222075	Arup jana	3		3	15		21
74.	11500222076	Ms mayank	2		3	6		11
75.	11500222077	Srijit pal	3	2	9			14
76.	11500222078	Shrimanta ghosh	3	2	6			11
77.	11500222079	Dipam dey	4	3	9			16
78.	11500222080	Neha jha	5			3	11	19
79.	11500222081	Sudipta mondal	5			0	9	14
80.	11500222083	Rahul das	3			0	6	9
81.	11500222084	Reezwan hosen khan	5	5	11			21
82.	11500222085	Gaurav thakur	6		4	9		19
83.	11500222086	Md tabrez shamim	3		3	10		16
84.	11500222087	Asmita saha	5	4	6			15

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			5	5	5	5	5	25
85.	11500222088	Manu singh	3	0	10			13
86.	11500222090	Arpit raj	4	1	7			12
87.	11500222091	Tamal majumdar	4		5	6		15
88.	11500222092	Sayantika manna	5		4	7		16
89.	11500222093	Ankita saha	4	5	9			18
90.	11500222095	Rohit raj	4	1	11			16
91.	11500222096	Rakesh de	6	2	9			17
92.	11500222097	Srijan sasmal	4		3	11		18
93.	11500222098	Rajarshi mondal	6		2	9		17
94.	11500222099	Snigdha ghosh	3	5	7			15
95.	11500222100	Sushovan barik	3	2	14			19
96.	11500222101	Chandan jha	4	3	8			15
97.	11500222102	Amitava roy	6			3	10	19
98.	11500222103	Sayan samanta	4			3	9	16
99.	11500222104	Rimjhim kumari	6			0	5	11
100.	11500222105	Vishal singh	3	4	10			17
101.	11500222106	Koushambha das	4	3	9			16
102.	11500222107	Maahi agarwal	2	3	11			16
103.	11500222108	Tusharkanti pal	2		3	12		17
104.	11500222109	Mridul panda	2	3	9			14
105.	11500222110	Kareena kumari	5	0	13			18
106.	11500222111	Abhradeep paul	4	3	9			16
107.	11500222112	Abhijan das	4			5	13	22
108.	11500222113	Arijit dawn	3			4	9	16
109.	11500222114	Asim das	3			3	10	16
110.	11500222115	Aashika kumari	2	2	7			11
111.	11500222116	Abhranil ray	5			4	12	21
112.	11500222117	Subhradeep basu	4	4	11			19

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			**5**	**5**	**5**	**5**	**5**	**25**
113.	11500222118	Tanujit banerjee	4	2	9			15
114.	11500222119	Kunal kumar verma	4	4	8			16
115.	11500223117	Ajanta ghosh	5			3	5	13
116.	11500223118	Alakendu ghosh	4			2	10	16
117.	11500223119	Argha ghosh	4	5	6			15
118.	11500223120	Arkadipta kundu	4	2	9			15
119.	11500223121	Barsha mandal	5		4	7		16
120.	11500223122	Bidisha bhattacharjee	4		4	8		16
121.	11500223123	Koustav dutta	4	5	9			18
122.	11500223124	Prithwis halder	4	4	8			16
123.	11500223125	Rahul dey	4		1	11		16
124.	11500223126	Saikat dasgupta	3	2	15			20
125.	11500223127	Samapti hazra	4	2	12			18
126.	11500223128	Samima afroj	2		3	12		17
127.	11500223129	Sangita gorai	6	2	9			17
128.	11500223131	Sourav sarkar	4	4	8			16
129.	11500223132	Suman mondal	3			2	15	20
130.	11500223133	Sumana giri	4			2	9	15
131.	11500223134	Upal pramanik	4			2	12	18
132.	11500223135	Youbaraj saha	4	3	11			18
133.	11500223136	Subrata bauri	2	3	12			17

Threshold marks set by program							**60%**
Number of students scored more than/equal to threshold							**95**
Total number of students							**133**
Percentage of students scored more than/equal to threshold							**71.42%**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Sample Corrected Copies of Class Test 1

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

B. P. PODDAR INSTITUTE OF MANAGEMENT & TECHNOLOGY

Class Test 2/ B.TECH /IT (NEW)/SEM 5/ESC 501/2024-25

SOFTWARE ENGINEERING

Time Allotted: 50 minutes **Full Marks: 25**

OUTCOME BASED EDUCATION (OBE)

Question No.	Knowledge Domain & Level	Allotted Marks	CO
1(a–e)	Understand (L2)	5 (1 each)	CO4, CO5
2	Analyze (L4)	5	CO4
3	Analyze (L4)	5	CO5
4	Create (Level 6)	2	CO4
5	Evaluate (Level 5)	3	CO4
6	Create (Level 6)	5	CO5

Group-A

(Multiple Choice Type Questions)

Answer the following questions (any five): **5×1=5**

1 a. Which technique is commonly used to represent project activities and their dependencies?
A. SWOT Analysis
B. Network Diagram
C. Pareto Chart
D. Fishbone Diagram

b. In a project network diagram, the longest path is called:
A. Shortest Path
B. Critical Path
C. Slack Path
D. Float Path

c. Which cost estimation technique uses historical data from similar projects?
A. Bottom-up estimation
B. Analogous estimation

C. Parametric estimation
D. Three-point estimation

d. Which UML diagram represents the static structure of a system?
A. Sequence Diagram
B. Activity Diagram
C. Class Diagram
D. Use Case Diagram

e. Which UML diagram is primarily used to model user interactions with the system?
A. Use Case Diagram
B. State Diagram
C. Activity Diagram
D. Object Diagram

Group-B (Short Answer Type Questions)

Answer any four of the following: **4×5=20**

2. Define Critical Path and explain its importance in project scheduling. A project consists of multiple interdependent activities with varying durations. Analyze how the critical path can be identified and explain its impact on project completion if one critical activity is delayed. **(2+3)**

3. What is a UML Class Diagram? Given a software system with modules like Login, Payment, and Order Processing: Analyze which UML diagrams (class, sequence, activity) would best represent its structure and behavior, and justify your choice. **(2+3)**

4. Design a project schedule and network diagram for an Online Food Delivery System. **(5)**
Include:

- Activity sequencing
- Time estimation (PERT/CPM)
- Identification of critical path.

5. A project manager must choose between bottom-up and parametric cost estimation. Evaluate which method is more appropriate for a large-scale software project and justify your decision. **(5)**

6. Create a UML model for a Banking System including: **(5)**

- Class diagram
- Sequence diagram for transaction process
- Use case diagram to analyze system structure and behavior.

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Question–CO Mapping Table (CO3 to CO4)

Question No.	Question Description	Mapped CO	Justification
1(a–e)	Concepts on Develop project schedule and network diagram for different projects using standard metrics and models and analyze the structure and behaviour of a software system using modern engineering tools like UML diagrams.	**CO4, CO5**	Understanding project schedule, network diagram and UML diagrams concepts
2	Define Critical Path and explain its importance in project scheduling. A project consists of multiple interdependent activities with varying durations. Analyze how the critical path can be identified and explain its impact on project completion if one critical activity is delayed.	**CO4**	Students build schedules, diagrams, and plans using integrated models
3	What is a UML Class Diagram? Given a software system with modules like Login, Payment, and Order Processing: Analyze which UML diagrams (class, sequence, activity) would best represent its structure and behavior, and justify your choice.	**CO5**	Students interpret and examine UML diagrams to understand systems
4	Design a project schedule and network diagram for an Online Food Delivery System. Include: ➢ Activity sequencing ➢ Time estimation	**CO4**	Students actively create solutions by combining knowledge of scheduling models, cost constraints, and uncertainty handling.

	(PERT/CPM) Identification of critical path.		
5	A project manager must choose between bottom-up and parametric cost estimation. Evaluate which method is more appropriate for a large-scale software project and justify your decision	**CO4**	Students actively create solutions by combining knowledge of scheduling models, cost constraints, and uncertainty handling.
6	Create a UML model for a Banking System including: ➢ Class diagram ➢ Sequence diagram for transaction process ➢ Use case diagramto analyze system structure and behavior.	**CO5**	Students interpret and examine UML diagrams to understand systems

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Scheme of Evaluation of Class Test 2

Q.No.	Question	Marks Awarded	CO Mapping	Cognitive Level	Marks (M) to be awarded
1. a	Which technique is commonly used to represent project activities and their dependencies? A. SWOT Analysis B. Network Diagram C. Pareto Chart D. Fishbone Diagram	1	CO4, CO5	Understand (L2)	If Correct M=1
1.b	In a project network diagram, the longest path is called: A. Shortest Path B. Critical Path C. Slack Path D. Float Path	1	CO4, CO5	Understand (L2)	If Correct M=1
1. c	Which cost estimation technique uses historical data from similar projects? A. Bottom-up estimation B. Analogous estimation C. Parametric estimation D. Three-point estimation	1	CO4, CO5	Understand (L2)	If Correct M=1
1. d	Which UML diagram represents the static structure of a system? A. Sequence Diagram B. Activity Diagram C. Class Diagram D. Use Case Diagram	1	CO4, CO5	Understand (L2)	If Correct M=1
2	Define Critical Path and explain its importance in project scheduling. A project consists of multiple interdependent activities with varying durations. Analyze how the	2+3	CO4	Analyze (L4)	If Correct M=5

	critical path can be identified and explain its impact on project completion if one critical activity is delayed.				
3	What is a UML Class Diagram? Given a software system with modules like Login, Payment, and Order Processing: Analyze which UML diagrams (class, sequence, activity) would best represent its structure and behavior, and justify your choice.	2+3	CO5	Analyze (L4)	If Correct M=5
4	Design a project schedule and network diagram for an Online Food Delivery System. Include: ➢ Activity sequencing ➢ Time estimation (PERT/CPM) Identification of critical path.	5	CO4	Create (Level 6)	If Correct M=5
5	A project manager must choose between bottom-up and parametric cost estimation. Evaluate which method is more appropriate for a large-scale software project and justify your decision.	5	CO4	Evaluate (Level 5)	If Correct M=5
6	Create a UML model for a Banking System including: ➢ Class diagram ➢ Sequence diagram for transaction process Use case diagram to analyze system structure and behavior.	5	CO5	Create (Level 6)	If Correct M=5

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Model Answer of Class Test 2

Group-A: Very Short Answer Questions **(1×5 = 5)**

1 a. Which technique is commonly used to represent project activities and their dependencies?

A. SWOT Analysis
B. Network Diagram
C. Pareto Chart
D. Fishbone Diagram
Answer: B. Network Diagram

b. In a project network diagram, the longest path is called:

A. Shortest Path
B. Critical Path
C. Slack Path
D. Float Path
Answer: B. Critical Path

c. Which cost estimation technique uses historical data from similar projects?

A. Bottom-up estimation
B. Analogous estimation
C. Parametric estimation
D. Three-point estimation
Answer: B. Analogous estimation

d. Which UML diagram represents the static structure of a system?

A. Sequence Diagram
B. Activity Diagram
C. Class Diagram
D. Use Case Diagram
Answer: C. Class Diagram

e. Which UML diagram is primarily used to model user interactions with the system?

A. Use Case Diagram
B. State Diagram
C. Activity Diagram
D. Object Diagram
Answer: A. Use Case Diagram

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Group-B: Short Answer Type Questions **(4×5 = 20)**

2. Define Critical Path and explain its importance in project scheduling. What is risk management in project planning?
The critical path is the longest sequence of dependent activities that determines the minimum project duration. Any delay in critical activities delays the entire project.
Risk management involves identifying, analyzing, and mitigating uncertainties that may impact project objectives.

3. What is a UML Class Diagram? Difference between aggregation and composition in UML.
A class diagram represents the static structure of a system, showing classes, attributes, methods, and relationships.
Aggregation: Weak “has-a” relationship (independent lifecycles)
Composition: Strong relationship (dependent lifecycle)

4. Explain PERT and CPM techniques with examples.
PERT uses probabilistic time estimates (O, M, P)
CPM uses fixed durations
Both help identify critical path and optimize scheduling

5. Describe cost estimation techniques in project management.
Analogous estimation
Parametric estimation
Bottom-up estimation
Three-point estimation

6. Explain different UML diagrams used to analyze system structure and behavior.
Structure diagrams: Class, Component, Deployment
Behavior diagrams: Sequence, Activity, State Machine, Use Case

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Assessment of Class Test 2

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			**5**	**5**	**5**	**5**	**5**	**25**
1.	11500222001	Tanmay paul	4	2	9			15
2.	11500222002	Sneha debnath	4	4	8			16
3.	11500222003	Ananda datta	4	2	3			9
4.	11500222004	Nishita dey	5			3	5	13
5.	11500222005	Kritika laxmi	4			2	10	16
6.	11500222006	Yash gupta	4	5	6			15
7.	11500222007	Arka adhikari	4	2	9			15
8.	11500222008	Tanmay raj	5		4	7		16
9.	11500222009	Smarak basak	4		4	8		16
10.	11500222010	Diptesh bhattacharyya	4	5	9			18
11.	11500222011	Ambapali datta	4	4	8			16
12.	11500222012	Ritesh saw	4		1	11		16
13.	11500222013	Shirodhrit bhowmick	3	2	5	5	5	20
14.	11500222014	Subhojit pachhal	4	2	12			18
15.	11500222015	Israr arif	2		3	12		17
16.	11500222016	Mrityunjay aditya	6	2	9			17
17.	11500222017	Ritikesh singh	4	4	8			16
18.	11500222018	Arpana kumari	3	2	6			11
19.	11500222019	Suman jana	4	3	9			16
20.	11500222020	Madhumita maiti	5	3	11			19
21.	11500222021	Sarat menon	5	0	9			14
22.	11500222022	Rajib sant	3	0	6			9
23.	11500222023	Sattwik das	5	5	11			21
24.	11500222024	Vivek kumar	6	4	9			19
25.	11500222025	Saniya	3	3	10			16
26.	11500222026	Shubham kumar choudhary	5	4	6			15
27.	11500222027	Sudhanshu kumar	3	0	10			13
28.	11500222028	Pilli shreyash rao	4	1	7			12

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			5	5	5	5	5	25
29.	11500222029	Shatarupa sen	3	0	10			13
30.	11500222030	Prithiraj das	4	1	7			12
31.	11500222031	Srijita mallick	4		5	6		15
32.	11500222032	Sayan sen	5		4	7		16
33.	11500222033	Shiwaangee gupta	4	5	9			18
34.	11500222034	Akash kumar das	4	1	11			16
35.	11500222035	Ashmita pramanick	6	2	9			17
36.	11500222036	Amandeep singh	4		3	11		18
37.	11500222037	Adrija datta	5			3	5	13
38.	11500222038	Abhijeet kumar sah	4			2	10	16
39.	11500222039	Shovan rana	4	5	6			15
40.	11500222040	Piyush arora	4	2	9			15
41.	11500222041	Ayush ray	5		4	7		16
42.	11500222042	Mayukh kar	4		4	8		16
43.	11500222043	Sandhya prasad	4	5	9			18
44.	11500222044	Priya rajak	4	4	8			16
45.	11500222045	Ritam chatterjee	4		1	11		16
46.	11500222046	Gobinda mondal	3	2	15			20
47.	11500222047	Debarjun simlai	4	2	12			18
48.	11500222048	Saheli mondal	2		3	12		17
49.	11500222049	Anwesha pal	6	2	9			17
50.	11500222050	Dipanjan nandy	4	4	8			16
51.	11500222051	Disha soni	4	2	9			15
52.	11500222052	Sayan de	4	4	8			16
53.	11500222053	Archak nath	5	4	12			21
54.	11500222054	Sarthak chakraborty	4	4	11			19
55.	11500222055	Manik kumar mahato	3	3	9			15
56.	11500222058	Ranjan kumar mahato	3	0	14			17

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			5	5	5	5	5	25
57.	11500222059	Dhruba maitra	3	0	10			13
58.	11500222060	Ayan pramanik	4	1	7			12
59.	11500222061	Aratrika samanta	4		5	6		15
60.	11500222062	Anubhav ishan	5		4	7		16
61.	11500222063	Aditya kumar sultania	4	5	9			18
62.	11500222064	Manish pandey	4	1	11			16
63.	11500222065	Jayasree saha	6	2	9			17
64.	11500222066	Sukesh bhunia	4		3	11		18
65.	11500222067	Sourav rai	6		2	9		17
66.	11500222068	Samrat das	3	5	5	2		15
67.	11500222069	Asad imam	3	2	14			19
68.	11500222070	Sanjib sen	4		1	11		16
69.	11500222071	Shubhadip koley	3	2	15			20
70.	11500222072	Md zeeshan mustafa	4	2	12			18
71.	11500222073	Souvik biswas	2		3	12		17
72.	11500222074	Soumyajit chowdhury	6	2	9			17
73.	11500222075	Arup jana	4	4	8			16
74.	11500222076	Ms mayank	4	2	9			15
75.	11500222077	Srijit pal	4	4	8			16
76.	11500222078	Shrimanta ghosh	4	2	3			9
77.	11500222079	Dipam dey	5			3	5	13
78.	11500222080	Neha jha	4			2	10	16
79.	11500222081	Sudipta mondal	4	5	6			15
80.	11500222083	Rahul das	4	2	9			15
81.	11500222084	Reezwan hosen khan	5		4	7		16
82.	11500222085	Gaurav thakur	4		4	8		16
83.	11500222086	Md tabrez shamim	3	3	10	16	3	3
84.	11500222087	Asmita saha	5	4	6	15	5	4

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			5	5	5	5	5	25
85.	11500222088	Manu singh	3	0	10			13
86.	11500222090	Arpit raj	4	1	7			12
87.	11500222091	Tamal majumdar	4		5	6		15
88.	11500222092	Sayantika manna	5		4	7		16
89.	11500222093	Ankita saha	4	5	9			18
90.	11500222095	Rohit raj	4	1	11			16
91.	11500222096	Rakesh de	6	2	9			17
92.	11500222097	Srijan sasmal	4		3	11		18
93.	11500222098	Rajarshi mondal	6		2	9		17
94.	11500222099	Snigdha ghosh	3	5	7			15
95.	11500222100	Sushovan barik	3	2	14			19
96.	11500222101	Chandan jha	4	3	8			15
97.	11500222102	Amitava roy	6			3	10	19
98.	11500222103	Sayan samanta	4			3	9	16
99.	11500222104	Rimjhim kumari	6			0	5	11
100.	11500222105	Vishal singh	3	4	10			17
101.	11500222106	Koushambha das	4	3	9			16
102.	11500222107	Maahi agarwal	2	3	11			16
103.	11500222108	Tusharkanti pal	2		3	12		17
104.	11500222109	Mridul panda	2	3	9			14
105.	11500222110	Kareena kumari	5	0	13			18
106.	11500222111	Abhradeep paul	4	3	9			16
107.	11500222112	Abhijan das	4	5	13			22
108.	11500222113	Arijit dawn	3	4	9			16
109.	11500222114	Asim das	3	3	10			16
110.	11500222115	Aashika kumari	2	2	7			11
111.	11500222116	Abhranil ray	5	4	12			21
112.	11500222117	Subhradeep basu	4	4	11			19

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Q1	Q2	Q3	Q4	Q5	Total
Max Marks →			**5**	**5**	**5**	**5**	**5**	**25**
113.	11500222118	Tanujit banerjee	3	0	10			13
114.	11500222119	Kunal kumar verma	4	1	7			12
115.	11500223117	Ajanta ghosh	5		4	7		16
116.	11500223118	Alakendu ghosh	4	5	9			18
117.	11500223119	Argha ghosh	4	1	11			16
118.	11500223120	Arkadipta kundu	6	2	9			17
119.	11500223121	Barsha mandal	4		3	11		18
120.	11500223122	Bidisha bhattacharjee	6		2	9		17
121.	11500223123	Koustav dutta	3	5	7			15
122.	11500223124	Prithwis halder	3	2	14			19
123.	11500223125	Rahul dey	4	3	8			15
124.	11500223126	Saikat dasgupta	6			3	10	19
125.	11500223127	Samapti hazra	4			3	9	16
126.	11500223128	Samima afroj	6			0	5	11
127.	11500223129	Sangita gorai	3	4	10			17
128.	11500223131	Sourav sarkar	4	3	9			16
129.	11500223132	Suman mondal	2	3	11			16
130.	11500223133	Sumana giri	2		3	12		17
131.	11500223134	Upal pramanik	2	3	9			14
132.	11500223135	Youbaraj saha	5	0	13			18
133.	11500223136	Subrata bauri	4	3	9			16

Threshold marks set by program							**60%**
Number of students scored more than/equal to threshold							**111**
Total number of students							**133**
Percentage of students scored more than/equal to threshold							**83.45%**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Sample Corrected Copies of Class Test 2

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Assessment of Quiz (Conducted by University, on CO1 to CO5)

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
1.	11500222001	Tanmay paul	22
2.	11500222002	Sneha debnath	22
3.	11500222003	Ananda datta	22
4.	11500222004	Nishita dey	21
5.	11500222005	Kritika laxmi	22
6.	11500222006	Yash gupta	22
7.	11500222007	Arka adhikari	19
8.	11500222008	Tanmay raj	22
9.	11500222009	Smarak basak	24
10.	11500222010	Diptesh bhattacharyya	21
11.	11500222011	Ambapali datta	25
12.	11500222012	Ritesh saw	18
13.	11500222013	Shirodhrit bhowmick	22
14.	11500222014	Subhojit pachhal	21
15.	11500222015	Israr arif	22
16.	11500222016	Mrityunjay aditya	25
17.	11500222017	Ritikesh singh	22
18.	11500222018	Arpana kumari	25
19.	11500222019	Suman jana	22
20.	11500222020	Madhumita maiti	16
21.	11500222021	Sarat menon	22
22.	11500222022	Rajib sant	22
23.	11500222023	Sattwik das	25
24.	11500222024	Vivek kumar	22
25.	11500222025	Saniya	22
26.	11500222026	Shubham kumar choudhary	22
27.	11500222027	Sudhanshu kumar	22
28.	11500222028	Pilli shreyash rao	24

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			25
29.	11500222029	Shatarupa sen	22
30.	11500222030	Prithiraj das	25
31.	11500222031	Srijita mallick	22
32.	11500222032	Sayan sen	21
33.	11500222033	Shiwaangee gupta	22
34.	11500222034	Akash kumar das	0
35.	11500222035	Ashmita pramanick	22
36.	11500222036	Amandeep singh	21
37.	11500222037	Adrija datta	22
38.	11500222038	Abhijeet kumar sah	22
39.	11500222039	Shovan rana	21
40.	11500222040	Piyush arora	22
41.	11500222041	Ayush ray	22
42.	11500222042	Mayukh kar	21
43.	11500222043	Sandhya prasad	18
44.	11500222044	Priya rajak	22
45.	11500222045	Ritam chatterjee	22
46.	11500222046	Gobinda mondal	20
47.	11500222047	Debarjun simlai	20
48.	11500222048	Saheli mondal	19
49.	11500222049	Anwesha pal	25
50.	11500222050	Dipanjan nandy	21
51.	11500222051	Disha soni	22
52.	11500222052	Sayan de	21
53.	11500222053	Archak nath	21
54.	11500222054	Sarthak chakraborty	22
55.	11500222055	Manik kumar mahato	25
56.	11500222058	Ranjan kumar mahato	21

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			25
57.	11500222059	Dhruba maitra	25
58.	11500222060	Ayan pramanik	21
59.	11500222061	Aratrika samanta	20
60.	11500222062	Anubhav ishan	25
61.	11500222063	Aditya kumar sultania	25
62.	11500222064	Manish pandey	25
63.	11500222065	Jayasree saha	20
64.	11500222066	Sukesh bhunia	25
65.	11500222067	Sourav rai	25
66.	11500222068	Samrat das	22
67.	11500222069	Asad imam	25
68.	11500222070	Sanjib sen	25
69.	11500222071	Shubhadip koley	25
70.	11500222072	Md zeeshan mustafa	25
71.	11500222073	Souvik biswas	25
72.	11500222074	Soumyajit chowdhury	25
73.	11500222075	Arup jana	25
74.	11500222076	Ms mayank	20
75.	11500222077	Srijit pal	25
76.	11500222078	Shrimanta ghosh	25
77.	11500222079	Dipam dey	25
78.	11500222080	Neha jha	25
79.	11500222081	Sudipta mondal	25
80.	11500222083	Rahul das	25
81.	11500222084	Reezwan hosen khan	25
82.	11500222085	Gaurav thakur	25
83.	11500222086	Md tabrez shamim	25
84.	11500222087	Asmita saha	25

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
85.	11500222088	Manu singh	25
86.	11500222090	Arpit raj	25
87.	11500222091	Tamal majumdar	25
88.	11500222092	Sayantika manna	25
89.	11500222093	Ankita saha	25
90.	11500222095	Rohit raj	17
91.	11500222096	Rakesh de	25
92.	11500222097	Srijan sasmal	25
93.	11500222098	Rajarshi mondal	20
94.	11500222099	Snigdha ghosh	25
95.	11500222100	Sushovan barik	25
96.	11500222101	Chandan jha	25
97.	11500222102	Amitava roy	25
98.	11500222103	Sayan samanta	25
99.	11500222104	Rimjhim kumari	20
100.	11500222105	Vishal singh	25
101.	11500222106	Koushambha das	22
102.	11500222107	Maahi agarwal	25
103.	11500222108	Tusharkanti pal	20
104.	11500222109	Mridul panda	20
105.	11500222110	Kareena kumari	25
106.	11500222111	Abhradeep paul	25
107.	11500222112	Abhijan das	25
108.	11500222113	Arijit dawn	25
109.	11500222114	Asim das	25
110.	11500222115	Aashika kumari	22
111.	11500222116	Abhranil ray	25
112.	11500222117	Subhradeep basu	25

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
113.	11500222118	Tanujit banerjee	25
114.	11500222119	Kunal kumar verma	25
115.	11500223117	Ajanta ghosh	25
116.	11500223118	Alakendu ghosh	25
117.	11500223119	Argha ghosh	25
118.	11500223120	Arkadipta kundu	22
119.	11500223121	Barsha mandal	25
120.	11500223122	Bidisha bhattacharjee	25
121.	11500223123	Koustav dutta	25
122.	11500223124	Prithwis halder	25
123.	11500223125	Rahul dey	15
124.	11500223126	Saikat dasgupta	21
125.	11500223127	Samapti hazra	25
126.	11500223128	Samima afroj	25
127.	11500223129	Sangita gorai	25
128.	11500223131	Sourav sarkar	25
129.	11500223132	Suman mondal	25
130.	11500223133	Sumana giri	25
131.	11500223134	Upal pramanik	25
132.	11500223135	Youbaraj saha	18
133.	11500223136	Subrata bauri	25

Threshold marks set by program						**60%**
Number of students scored more than/equal to threshold						**132**
Total number of students						**133**
Percentage of students scored more than/equal to threshold						**99.24%**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Assignment (on CO1 to CO5)

1. Write the observations, inference, notes for each assignment separately. Write the observations wherever necessary with explanation of the details.

2. Submit the assignment as a single file for all questions at the end of the classroom teaching. The last date of submission of is 10th May 2025 or one week after the completion of teaching-learning in classroom whichever is later.

S. No.	Assignment Task	Marks	CO	PO
1.	Why is the analysis stage of software engineering considered so important? What approaches can be taken to ensure it is successful?	5	CO1	PO1, PO2, PO3, PSO1
2.	Define feasibility study. What are the contents we should contain in feasibility report? Discuss functional and non-functional requirements?	5	CO1	PO1, PO2, PO3, PO11, PSO1, PSO2
3.	What are the principal causes for software development project failure? According to the Standish Report, approximately how often do these projects fail to meet their user's needs and/or fail to meet their schedules? What software engineering principles can be applied to reduce this risk?	5	CO4	PO2, PO3, PO11, PSO2
4.	What is the advantage of using prototype software development model instead of waterfall model? Also explain the effect of defining a prototype on the overall cost of the software project?	5	CO1	PO2, PO3, PSO1
5.	What major shortcoming of the Waterfall Model does the Spiral Model address? How does the Spiral Model handle the need for risk management and address the need of accurately determining the software requirements?	5	CO1	PO2, PO3, PO4, PSO1
6.	How can we derive the size of software product? What are function points? What are software project estimation techniques available?	5	CO3	PO1, PO2, PO11, PSO1
7.	Compute function point value for a project with the following domain characteristics: No. of I/P = 30 No. of O/P = 62 No. of user Inquiries = 24 No. of files = 8 No. of external interfaces = 2 Assume that all the complexity adjustment	5	CO4	PO1, PO2, PSO1

	values are average. Assume that 14 algorithms have been counted.			
8.	What is the difference between a Class Diagram and an Object Diagram? Explain Class Diagram with Example.	5	CO5	PO1, PO3, PSO1
9.	Differentiate Between Structural and Behavioral Diagrams. Draw and explain Activity Diagram for Library Management System.	5	CO5	PO1, PO3, PO5, PSO1
10.	Compare DFD, Decision Tree, Decision Table, and Structured English. Draw a Decision Tree for Loan Approval System.	5	CO2	PO1, PO2, PO3, PSO1
11.	What are the components of a DFD? Explain each? Differentiate between Logical DFD and Physical DFD.	5	CO2	PO1, PO2, PSO1
12.	A company needs to develop digital signal processing software for one of its newest inventions. The software is expected to have 40000 lines of code. The company needs to determine the effort in person-months needed to develop this software using the basic COCOMO model. The multiplicative factor for this model is given as 2.8 for the software development on embedded systems, while the exponentiation factor is given as 1.20. What is the estimated effort in person-months?	5	CO4	PO1, PO2, PO11, PSO1
13.	The availability of a complex software is 90%. Its Mean Time Between Failure (MTBF) is 200 days. Because of the critical nature of the usage, the organization deploying the software further enhanced it to obtain an availability of 95%. In the process, the Mean Time To Repair (MTTR) increased by 5 days. What is the MTBF of the enhanced software?	5	CO3	PO1, PO2, PO4. PSO1, PSO2

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Scheme of Evaluation of Assignment

1.

Description	Marks awarded	Knowledge level attained
Explanation of importance of analysis stage	2	Understand
Approaches to ensure successful analysis	2	Apply
Logical justification / conclusion	1	Analyze

2.

Description	Marks awarded	Knowledge level attained
Definition of feasibility study	1	Remember
Contents of feasibility report	2	Understand
Functional requirements explanation	1.5	Understand
Non-functional requirements explanation	1.5	Understand

3.

Description	Marks awarded	Knowledge level attained
Causes of software project failure	2	Understand
Standish Report statistics	1	Remember
Software engineering principles to reduce risk	2	Apply

4.

Description	Marks awarded	Knowledge level attained
Advantages of prototype model	2	Understand
Comparison with waterfall model	2	Analyze
Effect of prototype on cost	1	Analyze

5.

Description	Marks awarded	Knowledge level attained
Shortcoming of waterfall addressed by spiral model	2	Understand
Risk management explanation	2	Analyze
Requirement refinement in spiral model	1	Apply

6.

Description	Marks awarded	Knowledge level attained
Software size derivation	1.5	Understand
Function point definition	1.5	Remember
Estimation techniques	2	Understand

7.

Description	Marks awarded	Knowledge level attained
Identification of components (I/P, O/P, etc.)	2	Apply
Complexity adjustment handling	1.5	Apply
Final FP calculation	1.5	Apply

8.

Description	Marks awarded	Knowledge level attained
Difference explanation	2	Understand
Class diagram explanation	2	Understand
Example diagram explanation	1	Apply
Difference explanation	2	Understand

9.

Description	Marks awarded	Knowledge level attained
Differences between structural & behavioral diagrams	2	Understand
Activity diagram drawing	2	Apply
Explanation of LMS activity flow	1	Analyze
Differences between structural & behavioral diagrams	2	Understand

10.

Description	Marks awarded	Knowledge level attained
Comparison of DFD, Decision Tree, Table, Structured English	2	Analyze
Decision tree construction	3	Apply

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

11.

Description	Marks awarded	Knowledge level attained
Components of DFD explanation	3	Understand
Logical vs Physical DFD difference	2	Analyze

12.

Description	Marks awarded	Knowledge level attained
Identification of formula & parameters	2	Apply
Effort calculation steps	2	Apply
Final answer & interpretation	1	Analyze

13.

Description	Marks awarded	Knowledge level attained
Understanding reliability formulas	2	Understand
Calculation of MTBF / MTTR relation	2	Apply
Final result & interpretation	1	Analyze

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Model Answer of Assignment

1. Importance of Analysis Stage & Approaches (3+2)

(a) Importance of Analysis Stage (3 Marks)

The analysis stage in Software Engineering is the most critical phase of the Software Development Life Cycle (SDLC) because it defines what the system should do before designing or coding begins.

Importance:

- Requirement Identification:
- It helps in clearly identifying user needs and system requirements.
- Reduces Errors and Rework:
- Proper analysis avoids misunderstanding, reducing costly changes later.
- Foundation for Design:
- The entire system design is based on the analysis document (SRS).

Improves Communication:

- Acts as a bridge between users and developers.
- Project Success Factor:
- Most project failures occur due to poor requirement analysis.

(b) Approaches for Successful Analysis (2 Marks)

Requirement Gathering Techniques:

- Interviews
- Questionnaires
- Observation
- Modeling Techniques:
- Data Flow Diagrams (DFD)
- UML diagrams

Prototyping:

- Early working model to validate requirements
- User Involvement:
- Continuous feedback from stakeholders

2. Feasibility Study & Requirements (1+2+2)

(a) Definition (1 Mark)

A feasibility study is the process of evaluating whether a software project is technically, economically, and operationally feasible before development begins.

(b) Contents of Feasibility Report (2 Marks)

1. Technical Feasibility:

Whether required technology is available.

2. Economic Feasibility:

Cost vs benefit analysis.

3. Operational Feasibility:

Whether users can operate the system.

4. Schedule Feasibility:

Whether project can be completed on time.

5. Legal & Organizational Feasibility (optional):

Compliance with laws and policies.

(c) Functional and Non-Functional Requirements (2 Marks)

Functional Requirements:

- Define what the system does
- Example:
- Login system
- Data entry
- Report generation

Non-Functional Requirements:

- Define how the system performs
- Example:
- Security
- Performance
- Reliability
- Usability

3. Software Project Failure

(a) Causes of Failure

- Poor requirement gathering
- Lack of user involvement
- Unrealistic deadlines
- Poor project management
- Changing requirements

(b) Standish Report Statistics

- According to the Standish Group Report:
- ~30% projects are successful
- ~50% are challenged (over budget, delayed)
- ~20% fail completely

(c) Software Engineering Principles to Reduce Risk

- Proper Requirement Engineering
- Iterative Development (Agile Model)
- Risk Management Planning
- User Involvement throughout SDLC
- Early Testing and Validation
- Modular Design Approach

4. Prototype vs Waterfall Model

(a) Advantages of Prototype Model

- Early user feedback
- Better requirement clarity
- Reduced risk of failure
- Improved user satisfaction

(b) Effect on Cost (2 Marks)

- Initial cost increases due to prototype development
- Overall cost decreases due to:
- Reduced rework
- Fewer errors in final system

5. Spiral Model

(a) Shortcoming Addressed

The Spiral Model addresses the major drawback of Waterfall Model, which is:

- Lack of risk analysis
- No flexibility for requirement changes

(b) Risk Management & Requirements (3 Marks)

- Each spiral cycle includes risk analysis phase
- Prototype is developed to reduce uncertainty
- Requirements are refined in every iteration
- Continuous customer feedback is included

6. Software Size & Estimation

(a) Software Size Derivation

Software size can be measured using:

- Lines of Code (LOC)
- Function Points (FP)

(b) Function Points

Function Points measure software size based on functionality provided to the user.

Components:

- Inputs
- Outputs

- User Queries
- Files
- External Interfaces

(c) Estimation Techniques

- COCOMO Model
- Function Point Analysis
- Expert Judgment
- Delphi Technique
- LOC-based Estimation

7. Function Point Calculation

Given: Inputs = 30; Outputs = 62; Inquiries = 24; Files = 8; External Interfaces = 2

Total = 126

Step 1: Unadjusted Function Points

Assume average weight = 4

UFP = 126 × 4 = 504

Step 2: Adjustment

Given 14 algorithms counted → add 14

Adjusted FP = 504 + 14 = 518

Answer: Function Point = 518

8. Class Diagram vs Object Diagram

(a) Differences (2 Marks)

Class Diagram	Object Diagram
Blueprint of system	Snapshot of system
Static structure	Dynamic instance
General representation	Specific objects

(b) Class Diagram Example (3 Marks)

Example: Library System

- Class: Book
- Attributes: title, author
- Methods: issue(), return()
-
- Class: Student
-

- Attributes: name, roll_no
- Methods: borrowBook()
- Relationship:
- Student → borrows → Book

9. Structural vs Behavioral + Activity Diagram (2+3)

(a) Difference

Structural: static structure (Class, Object)

Behavioral: dynamic behavior (Activity, Sequence)

(b) Activity Diagram – Library System

Start

↓

Login

↓

Search Book

↓

Book Available?

/ \

Yes No

↓ ↓

Issue End

↓

Return Book

↓

End

10. DFD vs Decision Models + Decision Tree

Comparison:

- Model Purpose
- DFD Data flow representation
- Decision Tree Decision making flow
- Decision Table Rule-based system
- Structured English Algorithmic description

Decision Tree – Loan Approval

Income > Threshold?

/ \

Yes No

/ \

Credit Score? Reject

/ \

Good Poor

| |

Approve Reject

11. DFD Components

Components:

- External Entity:
- Source or destination of data (e.g., user)
- Process:
- Transforms input into output

Data Flow:

- Movement of data between components

Data Store:

- Storage of data (database/files)
- Logical vs Physical DFD:
- Logical DFD Physical DFD
- What system does How system is implemented
- No technology details Includes hardware/software

12. COCOMO Model

Given: LOC = 40000 → 40 KLOC

a = 2.8; b = 1.20

Formula: Effort = a × (KLOC)^b

Effort = 2.8 × (40)^1.20

40^1.20 ≈ 83.66; Effort = 2.8 × 83.66

= 234.25 person-months

Answer: Effort = 234.25 Person-Months

13. MTBF Problem

Given: Availability = 90% → 95%

MTBF = 200 days; MTTR increases by 5 days

Step 1: Initial MTTR

A = MTBF / (MTBF + MTTR)

0.90 = 200 / (200 + MTTR)

MTTR = 22.22 days

Step 2: New MTTR

MTTR = 22.22 + 5 = 27.22 days

Step 3: New MTBF\

0.95 = MTBF / (MTBF + 27.22)

MTBF ≈ 517 days

Answer: MTBF = 517 days (approx.)

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Assessment of Assignment (Conducted by University, on CO1 to CO5)

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
1.	11500222001	Tanmay paul	22
2.	11500222002	Sneha debnath	22
3.	11500222003	Ananda datta	22
4.	11500222004	Nishita dey	21
5.	11500222005	Kritika laxmi	22
6.	11500222006	Yash gupta	22
7.	11500222007	Arka adhikari	19
8.	11500222008	Tanmay raj	22
9.	11500222009	Smarak basak	24
10.	11500222010	Diptesh bhattacharyya	21
11.	11500222011	Ambapali datta	25
12.	11500222012	Ritesh saw	18
13.	11500222013	Shirodhrit bhowmick	22
14.	11500222014	Subhojit pachhal	21
15.	11500222015	Israr arif	22
16.	11500222016	Mrityunjay aditya	25
17.	11500222017	Ritikesh singh	22
18.	11500222018	Arpana kumari	25
19.	11500222019	Suman jana	22
20.	11500222020	Madhumita maiti	16
21.	11500222021	Sarat menon	22
22.	11500222022	Rajib sant	22
23.	11500222023	Sattwik das	25
24.	11500222024	Vivek kumar	22
25.	11500222025	Saniya	22
26.	11500222026	Shubham kumar choudhary	22
27.	11500222027	Sudhanshu kumar	22
28.	11500222028	Pilli shreyash rao	24

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			25
29.	11500222029	Shatarupa sen	22
30.	11500222030	Prithiraj das	25
31.	11500222031	Srijita mallick	22
32.	11500222032	Sayan sen	21
33.	11500222033	Shiwaangee gupta	22
34.	11500222034	Akash kumar das	0
35.	11500222035	Ashmita pramanick	22
36.	11500222036	Amandeep singh	21
37.	11500222037	Adrija datta	22
38.	11500222038	Abhijeet kumar sah	22
39.	11500222039	Shovan rana	21
40.	11500222040	Piyush arora	22
41.	11500222041	Ayush ray	22
42.	11500222042	Mayukh kar	21
43.	11500222043	Sandhya prasad	18
44.	11500222044	Priya rajak	22
45.	11500222045	Ritam chatterjee	22
46.	11500222046	Gobinda mondal	20
47.	11500222047	Debarjun simlai	20
48.	11500222048	Saheli mondal	19
49.	11500222049	Anwesha pal	25
50.	11500222050	Dipanjan nandy	21
51.	11500222051	Disha soni	22
52.	11500222052	Sayan de	21
53.	11500222053	Archak nath	21
54.	11500222054	Sarthak chakraborty	22
55.	11500222055	Manik kumar mahato	25
56.	11500222058	Ranjan kumar mahato	21

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			25
57.	11500222059	Dhruba maitra	25
58.	11500222060	Ayan pramanik	21
59.	11500222061	Aratrika samanta	20
60.	11500222062	Anubhav ishan	25
61.	11500222063	Aditya kumar sultania	25
62.	11500222064	Manish pandey	25
63.	11500222065	Jayasree saha	20
64.	11500222066	Sukesh bhunia	25
65.	11500222067	Sourav rai	25
66.	11500222068	Samrat das	22
67.	11500222069	Asad imam	25
68.	11500222070	Sanjib sen	25
69.	11500222071	Shubhadip koley	25
70.	11500222072	Md zeeshan mustafa	25
71.	11500222073	Souvik biswas	25
72.	11500222074	Soumyajit chowdhury	25
73.	11500222075	Arup jana	25
74.	11500222076	Ms mayank	20
75.	11500222077	Srijit pal	25
76.	11500222078	Shrimanta ghosh	25
77.	11500222079	Dipam dey	25
78.	11500222080	Neha jha	25
79.	11500222081	Sudipta mondal	25
80.	11500222083	Rahul das	25
81.	11500222084	Reezwan hosen khan	25
82.	11500222085	Gaurav thakur	25
83.	11500222086	Md tabrez shamim	25
84.	11500222087	Asmita saha	25

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
85.	11500222088	Manu singh	25
86.	11500222090	Arpit raj	25
87.	11500222091	Tamal majumdar	25
88.	11500222092	Sayantika manna	25
89.	11500222093	Ankita saha	25
90.	11500222095	Rohit raj	17
91.	11500222096	Rakesh de	25
92.	11500222097	Srijan sasmal	25
93.	11500222098	Rajarshi mondal	20
94.	11500222099	Snigdha ghosh	25
95.	11500222100	Sushovan barik	25
96.	11500222101	Chandan jha	25
97.	11500222102	Amitava roy	25
98.	11500222103	Sayan samanta	25
99.	11500222104	Rimjhim kumari	20
100.	11500222105	Vishal singh	25
101.	11500222106	Koushambha das	22
102.	11500222107	Maahi agarwal	25
103.	11500222108	Tusharkanti pal	20
104.	11500222109	Mridul panda	20
105.	11500222110	Kareena kumari	25
106.	11500222111	Abhradeep paul	25
107.	11500222112	Abhijan das	25
108.	11500222113	Arijit dawn	25
109.	11500222114	Asim das	25
110.	11500222115	Aashika kumari	22
111.	11500222116	Abhranil ray	25
112.	11500222117	Subhradeep basu	25

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**25**
113.	11500222118	Tanujit banerjee	25
114.	11500222119	Kunal kumar verma	25
115.	11500223117	Ajanta ghosh	25
116.	11500223118	Alakendu ghosh	25
117.	11500223119	Argha ghosh	25
118.	11500223120	Arkadipta kundu	22
119.	11500223121	Barsha mandal	25
120.	11500223122	Bidisha bhattacharjee	25
121.	11500223123	Koustav dutta	25
122.	11500223124	Prithwis halder	25
123.	11500223125	Rahul dey	15
124.	11500223126	Saikat dasgupta	21
125.	11500223127	Samapti hazra	25
126.	11500223128	Samima afroj	25
127.	11500223129	Sangita gorai	25
128.	11500223131	Sourav sarkar	25
129.	11500223132	Suman mondal	25
130.	11500223133	Sumana giri	25
131.	11500223134	Upal pramanik	25
132.	11500223135	Youbaraj saha	18
133.	11500223136	Subrata bauri	25

Threshold marks set by program						**60%**
Number of students scored more than/equal to threshold						**133**
Total number of students						**133**
Percentage of students scored more than/equal to threshold						**100%**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Sample Corrected Copies of Assignment

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

University Question Paper 2024-25

(End Semester Examination)

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Answer Key of University Question Paper

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

University Results

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**100**
1.	11500222001	Tanmay paul	65
2.	11500222002	Sneha debnath	55
3.	11500222003	Ananda datta	55
4.	11500222004	Nishita dey	75
5.	11500222005	Kritika laxmi	55
6.	11500222006	Yash gupta	65
7.	11500222007	Arka adhikari	65
8.	11500222008	Tanmay raj	65
9.	11500222009	Smarak basak	65
10.	11500222010	Diptesh bhattacharyya	75
11.	11500222011	Ambapali datta	85
12.	11500222012	Ritesh saw	65
13.	11500222013	Shirodhrit bhowmick	75
14.	11500222014	Subhojit pachhal	55
15.	11500222015	Israr arif	75
16.	11500222016	Mrityunjay aditya	75
17.	11500222017	Ritikesh singh	55
18.	11500222018	Arpana kumari	55
19.	11500222019	Suman jana	65
20.	11500222020	Madhumita maiti	35
21.	11500222021	Sarat menon	45
22.	11500222022	Rajib sant	45
23.	11500222023	Sattwik das	75
24.	11500222024	Vivek kumar	55
25.	11500222025	Saniya	75
26.	11500222026	Shubham kumar choudhary	65
27.	11500222027	Sudhanshu kumar	65
28.	11500222028	Pilli shreyash rao	65

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			100
29.	11500222029	Shatarupa sen	65
30.	11500222030	Prithiraj das	75
31.	11500222031	Srijita mallick	75
32.	11500222032	Sayan sen	75
33.	11500222033	Shiwaangee gupta	65
34.	11500222034	Akash kumar das	45
35.	11500222035	Ashmita pramanick	75
36.	11500222036	Amandeep singh	65
37.	11500222037	Adrija datta	75
38.	11500222038	Abhijeet kumar sah	65
39.	11500222039	Shovan rana	55
40.	11500222040	Piyush arora	65
41.	11500222041	Ayush ray	75
42.	11500222042	Mayukh kar	65
43.	11500222043	Sandhya prasad	55
44.	11500222044	Priya rajak	75
45.	11500222045	Ritam chatterjee	65
46.	11500222046	Gobinda mondal	75
47.	11500222047	Debarjun simlai	55
48.	11500222048	Saheli mondal	85
49.	11500222049	Anwesha pal	65
50.	11500222050	Dipanjan nandy	75
51.	11500222051	Disha soni	85
52.	11500222052	Sayan de	75
53.	11500222053	Archak nath	65
54.	11500222054	Sarthak chakraborty	75
55.	11500222055	Manik kumar mahato	45
56.	11500222058	Ranjan kumar mahato	85

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			100
57.	11500222059	Dhruba maitra	65
58.	11500222060	Ayan pramanik	45
59.	11500222061	Aratrika samanta	75
60.	11500222062	Anubhav ishan	65
61.	11500222063	Aditya kumar sultania	65
62.	11500222064	Manish pandey	55
63.	11500222065	Jayasree saha	65
64.	11500222066	Sukesh bhunia	55
65.	11500222067	Sourav rai	55
66.	11500222068	Samrat das	65
67.	11500222069	Asad imam	55
68.	11500222070	Sanjib sen	85
69.	11500222071	Shubhadip koley	75
70.	11500222072	Md zeeshan mustafa	65
71.	11500222073	Souvik biswas	65
72.	11500222074	Soumyajit chowdhury	75
73.	11500222075	Arup jana	55
74.	11500222076	Ms mayank	45
75.	11500222077	Srijit pal	75
76.	11500222078	Shrimanta ghosh	55
77.	11500222079	Dipam dey	65
78.	11500222080	Neha jha	65
79.	11500222081	Sudipta mondal	55
80.	11500222083	Rahul das	55
81.	11500222084	Reezwan hosen khan	75
82.	11500222085	Gaurav thakur	75
83.	11500222086	Md tabrez shamim	85
84.	11500222087	Asmita saha	65

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			100
85.	11500222088	Manu singh	75
86.	11500222090	Arpit raj	95
87.	11500222091	Tamal majumdar	65
88.	11500222092	Sayantika manna	75
89.	11500222093	Ankita saha	75
90.	11500222095	Rohit raj	75
91.	11500222096	Rakesh de	45
92.	11500222097	Srijan sasmal	65
93.	11500222098	Rajarshi mondal	75
94.	11500222099	Snigdha ghosh	45
95.	11500222100	Sushovan barik	65
96.	11500222101	Chandan jha	65
97.	11500222102	Amitava roy	65
98.	11500222103	Sayan samanta	75
99.	11500222104	Rimjhim kumari	65
100.	11500222105	Vishal singh	85
101.	11500222106	Koushambha das	65
102.	11500222107	Maahi agarwal	85
103.	11500222108	Tusharkanti pal	75
104.	11500222109	Mridul panda	65
105.	11500222110	Kareena kumari	65
106.	11500222111	Abhradeep paul	75
107.	11500222112	Abhijan das	65
108.	11500222113	Arijit dawn	55
109.	11500222114	Asim das	45
110.	11500222115	Aashika kumari	85
111.	11500222116	Abhranil ray	65
112.	11500222117	Subhradeep basu	65

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

S. No.	Univ. Roll No.	Student's Name	Total
Max Marks →			**100**
113.	11500222118	Tanujit banerjee	65
114.	11500222119	Kunal kumar verma	75
115.	11500223117	Ajanta ghosh	75
116.	11500223118	Alakendu ghosh	55
117.	11500223119	Argha ghosh	65
118.	11500223120	Arkadipta kundu	65
119.	11500223121	Barsha mandal	75
120.	11500223122	Bidisha bhattacharjee	75
121.	11500223123	Koustav dutta	75
122.	11500223124	Prithwis halder	75
123.	11500223125	Rahul dey	75
124.	11500223126	Saikat dasgupta	75
125.	11500223127	Samapti hazra	85
126.	11500223128	Samima afroj	85
127.	11500223129	Sangita gorai	45
128.	11500223131	Sourav sarkar	75
129.	11500223132	Suman mondal	75
130.	11500223133	Sumana giri	65
131.	11500223134	Upal pramanik	55
132.	11500223135	Youbaraj saha	65
133.	11500223136	Subrata bauri	55

Threshold marks set by program	**50%**
Number of students scored more than/equal to threshold	**122**
Total number of students	**133**
Percentage of students scored more than/equal to threshold	**91.72%**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

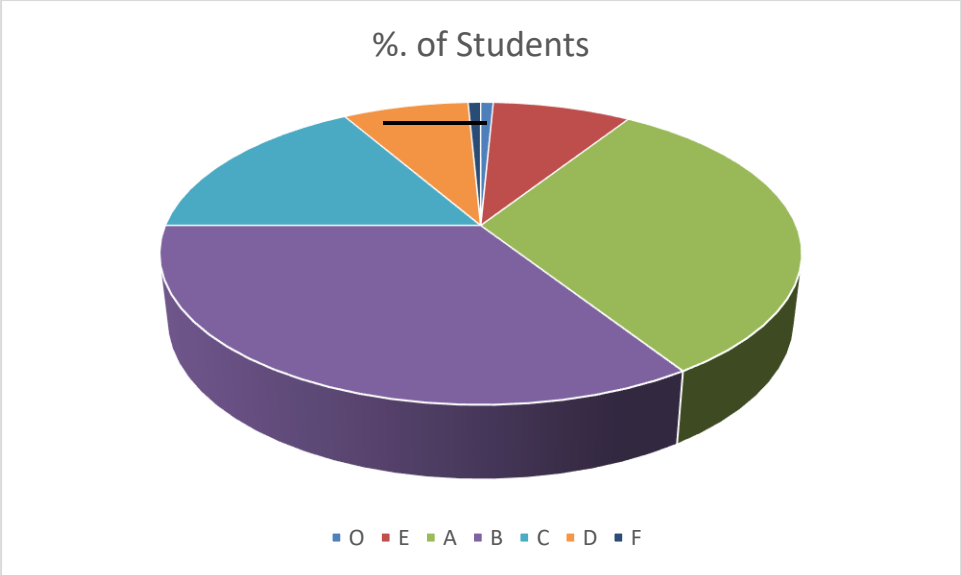
Department of Information Technology

Academic Year: 2024-25

University Results Analysis

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

Grade	No. of Students	% of Students
O	1	0.75
E	11	8.27
A	42	31.57
B	45	33.83
C	22	16.54
D	10	7.51
F	1	0.75
Total	133	100.00



Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

End Semester Students' Survey (CO Learning Assessment)

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

Please answer all questions on a 5-point scale (5- Excellent, 4- Good, 3- Fair, 2- Average, 1- Poor):

S. No.	Please rate for the following attributes	Rating
1.	Up to which extent are you able to understand the Software Development Life Cycle (SDLC) and its phases in software development?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
2.	How effectively can you apply process models such as Waterfall and Spiral models in software development scenarios?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
3.	To what extent are you able to perform feasibility analysis including technical feasibility and cost-benefit analysis (COCOMO model)?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
4.	How confidently can you design system models using DFDs, context diagrams, and structured analysis techniques?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
5.	Up to which extent are you able to differentiate between functional and object-oriented design approaches?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
6.	How effectively can you apply testing techniques such as unit testing, integration testing, verification, and validation?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
7.	To what extent are you able to use software metrics for monitoring and controlling software quality and project progress?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
8.	How effectively can you apply project management concepts such as scheduling, staffing, and software configuration management?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
9.	Up to which extent are you able to design UML diagrams such as class, sequence, activity, and state diagrams?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
10.	How well can you analyze and model real-world systems using UML diagrams for software design and implementation?	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

_____

Signature (optional)

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Mapping of End Semester Students' Survey (CO Learning Assessment) with CO

Question No.	CO1	CO2	CO3	CO4	CO5
1.	Y				
2.	Y				
3.		Y			
4.		Y			
5.			Y		
6.			Y		
7.				Y	
8.				Y	
9.					Y
10.					Y

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Sample Students' Survey

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

IMPACT ANALYSIS OF SLOW LEARNERS

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Impact Analysis of Slow Learners

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

S. No.	Univ. Roll No.	Student's Name	(Presentation)	(Report Writing)	Quiz (After Remedial Class)	(Class Test1)	(Class Test2)	(Quiz, conducted by univ.)	(Assignment)	End Semester Univ. Exam
Max Marks →			**25**	**25**	**10**	**25**	**20**	**25**	**25**	**100**
1	11500222003	Ananda datta	20	15	7	13	9	22	22	55
2	11500222007	Arka adhikari	20	13	8	13	15	19	19	65
3	11500222020	Madhumita maiti	23	15	3	19	19	16	16	35
4	11500222047	Debarjun simlai	20	15	10	18	18	20	20	55
5	11500222058	Ranjan kumar mahato	13	13	8	17	17	21	21	85
6	11500222060	Ayan pramanik	12	15	4	13	12	21	21	45
7	11500222067	Sourav rai	12	8	10	13	17	25	25	55
8	11500222068	Samrat das	12	10	7	7	15	22	22	65
9	11500222076	Ms mayank	12	8	6	11	15	20	20	45
10	11500222083	Rahul das	22	22	4	9	15	25	25	55
11	11500222095	Rohit raj	18	8	10	16	16	17	17	75
12	11500222108	Tusharkanti pal	20	15	10	17	17	20	20	75
13	11500222115	Aashika kumari	20	20	6	11	11	22	22	85
Threshold marks set by program			**60%**	**60%**	**60%**	**60%**	**60%**	**60%**	**60%**	**50%**
Number of students scored more than/equal to threshold			**8**	**7**	**10**	**5**	**10**	**13**	**13**	**6**
Total number of students			**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**
Percentage of students scored more than/equal to threshold			**61.53%**	**53.84%**	**76.92%**	**38.46%**	**76.92%**	**100%**	**100%**	**46.15%**
Remarks/Impact Analysis			**61.53% of slow learners passed in presentation.**	**53.84% of slow learners passed in report writing.**	**76.92% of slow learners passed in quiz.**	**38.46% of slow learners passed in class test1.**	**76.92% of slow learners passed in class test2.**	**100% of slow learners passed in quiz.**	**100% of slow learners passed in assignment.**	**46.15% of slow learners passed in university exam.**

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

CO, PO, AND PSO ATTAINMENT

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Overall Course Outcome Attainment

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

Section A

	Weightage	CO1	CO2	CO3	CO4	CO5
Internal Exam	20%	3	0	1	0	0
University Exam	80%	3	3	3	3	3
CO Attainment (Direct)	90%	3	2.4	2.6	2.4	2.4
CO Attainment (Indirect)	10%	2.5	2.8	2.6	2.5	2.7
Final CO Attainment		**2.95**	**2.44**	**2.6**	**2.50**	**2.61**
Overall CO Attainment		**2.62**				

S. No.	CO Statement	Final CO Attainment
CO1	Understand software lifecycle processes and models including traditional and modern approaches.	**2.95**
CO2	Design software using requirement models like DFD, decision tree, decision table, structured English.	**2.44**
CO3	Apply software testing and quality assurance techniques with relevant standards to ensure reliable software at the modular system and organizational level.	**2.60**
CO4	Develop project schedule and network diagram for different projects using standard metrics and models like cost estimation, scheduling and risk management.	**2.41**
CO5	Analyze the structure and behaviour of a software system using modern engineering tools like UML diagrams.	**2.43**
Overall Course Outcome Attainment		**2.57**

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

PO/PSO→	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**
Average of CO-PO mapping	**2.8**	**2.6**	**2**	**2.2**	**0.5**			**1**			**1**	**0.5**	**2.2**	**1**
PO Attainment	**2.45**	**2.27**	**1.75**	**1.92**	**0.44**	**0.00**	**0.00**	**0.88**	**0.00**	**0.00**	**0.88**	**0.44**	**1.92**	**0.88**

CO Contribution to PO/PSO: 33%- Level 1,
67%- Level 2,
100%- Level 3

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Observations on CO and PO Attainment

Course Name & Code: Software Engineering	**Course Code:** ESC 501
Year & Semester: 3rd Yr, 5th Sem	**Branch & Section:** Information Technology, Sec- A & B
Name of the Faculty: Dr. Gitosree Khan	

Set Target for CO attainment for this course was 1.98.

1. It is observed that the set target value has been attained for all Cos and the difference with the target is more than 10%.
2. PO attainment has been found to be slightly less than the mapped value.
3. 91.84% students scored more than or equal to the threshold marks in the end semester university examination.
4. Following the OBE manual, target for next academic year is 2.6.

CO Attainment of the Entire Class:

Set Target for CO Attainment	**1.98**
Overall CO Attainment of Sec A	2.57
Overall CO Attainment of Sec B	2.75
Average CO Attainment of the Class	**2.62**

PO Attainment of the Entire Class:

PO/PSO→	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**
Average of CO-PO mapping	**2.8**	**2.6**	**2**	**2.2**	**0.5**			**1**			**1**	**0.5**	**2.2**	**1**
PO Attainment of Sec A	2.39	2.22	1.71	1.88	0.43			0.86			0.86	0.43	1.88	0.86
PO Attainment of Sec B	2.50	2.32	1.78	1.96	0.45			0.89			0.89	0.45	1.96	0.89
Average PO Attainment of the Class	**2.45**	**2.27**	**1.75**	**1.92**	**0.44**	**0.00**	**0.00**	**0.88**	**0.00**	**0.00**	**0.88**	**0.44**	**1.92**	**0.88**

_____

Dr. Gitosree Khan

B. P. Poddar Institute of Management & Technology

Department of Information Technology

Academic Year: 2024-25

Plan of Action:

1. As the CO attainment of the entire class is high (1.98), next year's CO attainment value will be taken as 2.6.
2. One NPTEL course on Analog Communication is to be offered.
3. Guest Lectures on this course is to be organized.
4. One Seminar is to be organized.

_____

Dr. Gitosree Khan