

DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE



(AUTONOMOUS)
 Approved by AICTE & Affiliated to Anna University, Chennai
 Re-Accredited with 'A' Grade by NAAC, Accredited by TCS
 Accredited by NBA(AERO, CSE, IT & MECH)
 Re-Accredited by NBA(BME, ECE & EEE)
PERAMBALUR – 621 212, Tamil Nadu



LABORATORY COURSE PLAN

COURSE – INFORMATION:

LAB COURSE TITLE	SOFTWARE ENGINEERING LABORATORY			
LAB COURSE CODE	P23CSP21			
LAB COURSE STRUCTURE	LECTURE	TUTORIAL	PRACTICAL	CREDIT
	0	0	4	2
REGULATION	BRANCH	YEAR	SEMESTER	ACADEMIC YEAR
2023	CSE	I	I	2023-2024
COURSE INCHARGE				

SYLLABUS

COURSE OBJECTIVE:

The student should be made to:

- To impart state-of-the-art knowledge on Software Engineering and UML in an interactive manner through the Web.
- Present case studies to demonstrate practical applications of different concepts.
- Provide a scope to students where they can solve small, real-life problems.

LIST OF EXPERIMENTS

- Write a Problem Statement to define a title of the project with bounded scope of project
- Select relevant process model to define activities and related task set for assigned project
- Prepare broad SRS (Software Requirement Specification) for the above selected projects
- Prepare USE Cases and Draw Use Case Diagram using modelling Tool
- Develop the activity diagram to represent flow from one activity to another for software development
- Develop data Designs using DFD Decision Table & ER Diagram.

7. Draw class diagram, sequence diagram, Collaboration Diagram, State Transition Diagram for the assigned project
8. Write Test Cases to Validate requirements of assigned project from SRS Document
9. Evaluate Size of the project using function point metric for the assigned project
10. Estimate cost of the project using COCOMO and COCOMOII for the assigned project
11. Use CPM/PERT for scheduling the assigned project
12. Use timeline Charts or Gantt Charts to track progress of the assigned Project

TOTAL: 60 PERIODS

TEXT/REFERENCE BOOKS:

1. **Roger S. Pressman & Bruce R. Maxim** Software Engineering: A Practitioner's Approach (8th Edition) McGraw-Hill, 2019.
2. **Ian Sommerville** Software Engineering (10th Edition) Pearson, 2016.
3. **Pankaj Jalote** *An Integrated Approach to Software Engineering (3rd Edition)* Springer, 2005.
4. **Ali Behforooz & Frederick J. Hudson** *Software Engineering Fundamentals* Oxford University Press, 2009.

HARDWARE& SOFTWARE:

- Standalone desktops
- C / C++ / Java / Python / Equivalent Compiler
- Network simulator like NS2/Glomosim/OPNET/ Packet Tracer / Equivalent

VIRTUAL LAB LINK:

<https://www.studytonight.com/operating-system>

<https://hubpages.com/technology/Communication-Engineering-FAQs>

<https://www.nptelvideos.in/2012/11/computer-networks.html>

<https://www.tecmint.com/linux-network-configuration-and-troubleshooting-commands>

<https://www.comptechdoc.org/os/linux/commands/linuxcrsfiles.html>

EXP. NO.	NAME OF THE EXPERIMENTS	NO. OF PERIODS	CUMULATIVE PERIODS
CYCLE I			
1	Write a Problem Statement to define a title of the project with bounded scope of project	8	8
2	Select relevant process model to define activities and related task set for assigned project	4	12
3	Prepare broad SRS (Software Requirement Specification) for	8	20

	the above selected projects		
4	Prepare USE Cases and Draw Use Case Diagram using modelling Tool	4	24
5	Develop the activity diagram to represent flow from one activity to another for software development.	4	28
6	Develop data Designs using DFD Decision Table & ER Diagram.	8	36
7	Draw class diagram, sequence diagram, Collaboration Diagram, State Transition Diagram for the assigned project	4	40
8	Write Test Cases to Validate requirements of assigned project from SRS Document	8	48
9	Evaluate Size of the project using function point metric for the assigned project	4	52
10	Estimate cost of the project using COCOMO and COCOMOII for the assigned project	8	60

COURSE OUTCOMES:

On the completion of the course, the students will be able to

CO1: Produce the requirements and use cases the client wants for the software being Produced.

CO2: Participate in drawing up the project plan. The plan will include at least extent and work assessments of the project, the schedule, available resources, and risk management can model and specify the requirements of mid-range software and their architecture.

CO3: Create and specify such a software design based on the requirement specification that the software can be implemented based on the design.

CO4: Assess the extent and costs of a project with the help of several different assessment methods.

CO5: Develop a quality software product using agile process.

CO6: Apply scheduling algorithms for assigned projects using CPM / PERT

CO PO MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	3	2	2	1	-	-	-	1	2	1	1	2	3
CO 2	2	3	2	2	2	-	-	-	2	2	3	2	3	3
CO 3	2	3	3	2	2	-	-	-	1	2	2	1	3	2
CO 4	2	2	2	3	1	-	-	-	1	1	3	1	3	3
CO 5	2	2	3	2	2	-	-	1	3	2	2	2	3	3
CO 6	2	2	2	3	1	-	-	-	1	1	3	1	3	3
AVG:	3.00	3.00	2.33	2.16	1.66	1.50	1.66	2.00	2.50	1.66	3.00	2.50	2.83	2.83

ADDITIONAL EXPERIMENTS

EXP. NO.	NAME OF THE EXPERIMENTS	Identified Resource link
1	Implement Decision Tree Classifier and visualize the tree structure	https://scikit-learn.org/stable/modules/tree.htm
2	Implement Random Forest Classifier for classification on real-world datasets	https://scikit-learn.org/stable/modules/ensemble.html
3	Implement Support Vector Machine (SVM) for classification and compare kernels	https://scikit-learn.org/stable/modules/svm.html
4	Implement K-Means Clustering and visualize cluster formation	https://scikit-learn.org/stable/modules/clustering.html
5	Implement Hierarchical Clustering and plot dendrogram	https://www.datacamp.com/tutorial/naive-bayes-scikit-learn

MODEL LAB DETAILS

BATCH	REGISTER NO.	MODE OF LAB CONDUCT	DATE	TIMING
1		Offline Mode		

LIST OF QUESTIONS

1. What is a problem statement in software engineering?
2. Why is project scope important in software development?
3. What do you mean by bounded scope of a project?
4. How do you define the objectives of a software project?
5. What is a software process model?
6. What are the different types of software process models?
7. Why do we select a process model for a project?
8. What is the Waterfall model?
9. What is the Spiral model?
10. What is the Prototype model?
11. What is Agile methodology?
12. Which process model is best for your project and why?
13. What is SRS?
14. What are the main sections of an SRS document?
15. Why is SRS important in software development?
16. What is the difference between functional and non-functional requirements?
17. What are user requirements?
18. What are system requirements?
19. What is a use case?
20. What is the purpose of a use case diagram?
21. Who are actors in a use case diagram?
22. What is the difference between include and extend in use case diagrams?
23. Which tool can be used to draw UML diagrams?

24. What is an activity diagram?
25. Why is an activity diagram used?
26. What is the difference between a use case diagram and an activity diagram?
27. What is a DFD?
28. What are the levels of DFD?
29. What is the difference between logical DFD and physical DFD?
30. What is an ER diagram?
31. What are entities, attributes, and relationships?
32. What is a primary key?
33. What is a foreign key?
34. What is a decision table?
35. Where is a decision table used?
36. What is a class diagram?
37. What are the basic elements of a class diagram?
38. What is the difference between class and object?
39. What is a sequence diagram?
40. What is a collaboration diagram?
41. What is a state transition diagram?
42. What is the difference between sequence diagram and collaboration diagram?
43. Why are UML diagrams important in software design?
44. What is software testing?
45. Why are test cases written?
46. What are the components of a test case?
47. What is the difference between verification and validation?
48. What is black-box testing?
49. What is white-box testing?
50. What is a function point metric?
51. Why is function point analysis used?
52. What are the parameters considered in function point calculation?
53. What is COCOMO?
54. What is the difference between Basic COCOMO and COCOMO II?
55. Why is cost estimation important in project development?
56. What is effort estimation?
57. What is CPM?
58. What is PERT?
59. What is the difference between CPM and PERT?
60. What is a critical path?
61. Why is scheduling important in software project management?
62. What is a Gantt chart?
63. What is the use of a timeline chart?
64. How does a Gantt chart help track project progress?
65. What are milestones in project scheduling?
66. What assumptions did you make while defining your project scope?
67. How did you identify the requirements for your project?
68. Which actors are involved in your selected project?
69. Which UML diagrams did you prepare for your project?
70. How did you validate the requirements of your project?
71. Which testing method did you use in your project?
72. How did you estimate the size of your project?
73. How did you estimate the cost of your project?

74. What scheduling technique did you apply in your project?
75. What challenges did you face while preparing the project documentation?

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APPROVED B