A

Course File Report

On

"*Software Project Management*"

Department of

Computer Science & Engineering

CMR ENGINEERING COLLEGE

(Affiliated to J.N.T.U, HYDERABAD)

Kandlakoya (v),Medchal -501 401

(2023-2024)

CMR ENGINEERING COLLEGE
UGC AUTONOMOUS
(Approved by AICTE - New Delhi. Affiliated to JNTUH and Accredited by NAAC & NBA)

COURSE INSTRUCTOR NAME: Dr. Ravi Kumar Chandu ACADEMIC YEAR:2023-24

SUBJECT NAME: Software Project Management

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SEM START DATE AND END DATE: 29-01-2024 T0 04-06-2024

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HOD

1. DEPARTMENT VISION & MISSION

Vision:

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

Mission:

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

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

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

2. LIST OF PEOs, POs AND PSOs

2.1 Program Educational Objectives (PEO):

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

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

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

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

2.2. Program Outcomes (POs):

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

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.

2.3 Program Specific Outcomes (PSOs):

PSO1: Professional Skills and Foundations of Software development: Ability to analyze, design and develop applications by adopting the dynamic nature of Software developments.

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

3. Course Outcomes

S. No	Course Out Come
CO1	Describe and determine the process and importance of Project management from the perspectives of planning, tracking and completion of project
CO2	Compare and differentiate organization structures and project structures
CO3	Implement a project to manage project scheduling expenses and resource with the application of suitable project management tools
CO4	Create project plans that address real world management challenges

REVISED Bloom's Taxonomy Action Verbs

Definitions	I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Bloom's Definition	Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.	Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.
Verbs	• Choose • Define • Find • How • Label • List • Match • Name • Omit • Recall • Relate • Select • Show • Spell • Tell • What • When • Where • Which • Who • Why	• Classify • Compare • Contrast • Demonstrate • Explain • Extend • Illustrate • Infer • Interpret • Outline • Relate • Rephrase • Show • Summarize • Translate	• Apply • Build • Choose • Construct • Develop • Experiment with • Identify • Interview • Make use of • Model • Organize • Plan • Select • Solve • Utilize	• Analyze • Assume • Categorize • Classify • Compare • Conclusion • Contrast • Discover • Dissect • Distinguish • Divide • Examine • Function • Inference • Inspect • List • Motive • Relationships • Simplify • Survey • Take part in • Test for • Theme	• Agree • Appraise • Assess • Award • Choose • Compare • Conclude • Criteria • Criticize • Decide • Deduct • Defend • Determine • Disprove • Estimate • Evaluate • Explain • Importance • Influence • Interpret • Judge • Justify • Mark • Measure • Opinion • Perceive • Prioritize • Prove • Rate • Recommend • Rule on • Select • Support • Value	• Adapt • Build • Change • Choose • Combine • Compile • Compose • Construct • Create • Delete • Design • Develop • Discuss • Elaborate • Estimate • Formulate • Happen • Imagine • Improve • Invent • Make up • Maximize • Minimize • Modify • Original • Originate • Plan • Predict • Propose • Solution • Solve • Suppose • Test • Theory

Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing, Abridged Edition. Boston, MA: Allyn and Bacon.

Action Words for Bloom's Taxonomy					
Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
define	explain	solve	analyze	reframe	design
identify	describe	apply	compare	criticize	compose
describe	interpret	illustrate	classify	evaluate	create
label	paraphrase	modify	contrast	order	plan
list	summarize	use	distinguish	appraise	combine
name	classify	calculate	infer	judge	formulate
state	compare	change	separate	support	invent
match	differentiate	choose	explain	compare	hypothesize
recognize	discuss	demonstrate	select	decide	substitute
select	distinguish	discover	categorize	discriminate	write
examine	extend	experiment	connect	recommend	compile
locate	predict	relate	differentiate	summarize	construct
memorize	associate	show	discriminate	assess	develop
quote	contrast	sketch	divide	choose	generalize
recall	convert	complete	order	convince	integrate
reproduce	demonstrate	construct	point out	defend	modify
tabulate	estimate	dramatize	prioritize	estimate	organize
tell	express	interpret	subdivide	find errors	prepare
copy	identify	manipulate	survey	grade	produce
discover	indicate	paint	advertise	measure	rearrange
duplicate	infer	prepare	appraise	predict	rewrite
enumerate	relate	produce	break down	rank	role-play
listen	restate	report	calculate	score	adapt
observe	select	teach	conclude	select	anticipate
omit	translate	act	correlate	test	arrange
read	ask	administer	criticize	argue	assemble
recite	cite	articulate	deduce	conclude	choose
record	discover	chart	devise	consider	collaborate
repeat	generalize	collect	diagram	critique	collect
retell	give examples	compute	dissect	debate	devise
visualize	group	determine	estimate	distinguish	express
	illustrate	develop	evaluate	editorialize	facilitate
	judge	employ	experiment	justify	imagine
	observe	establish	focus	persuade	infer
	order	examine	illustrate	rate	intervene
	report	explain	organize	weigh	justify
	represent	interview	outline		make
	research	judge	plan		manage
	review	list	question		negotiate
	rewrite	operate	test		originate
	show	practice			propose
	trace	predict			reorganize
	transform	record			report
		schedule			revise
		simulate			schematize
		transfer			simulate
		write			solve
					speculate
					structure
					support
					test
					validate

4. Syllabus Copy

UNIT – I

Conventional Software Management: The waterfall Model, Conventional Software Management Performance, Evolution of Software Economics: software Economics. Pragmatic Software Cost Estimation. **Improving Software Economics**: Reducing Software Product Size, Improving Software Processes, Improving Team Effectiveness, Improving Automation, Achieving Required Quality, Peer Inspections.

UNIT – II

Conventional and Modern Software Management: Principles of Conventional Software Engineering, Principles of Modern Software Management, Transitioning to an interactive Process.

Life Cycle Phases: Engineering and Production Stages Inception, Elaboration, Construction, Transition phases.

UNIT – III

Artifacts of the Process: The Artifact Sets. Management Artifacts, Engineering Artifacts, Programmatic Artifacts.

Model Based Software Architectures: A Management Perspective and Technical Perspective .

UNIT – IV

Flows of the Process: Software Process Workflows. Inter Trans Workflows.

Checkpoints of the Process: Major Milestone, Minor Milestones, Periodic Status Assessments. Interactive Process Planning: Work Breakdown Structures, Planning Guidelines, Cost and Schedule Estimating. Interaction Planning Process, Pragmatic Planning .

UNIT – V

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, and Evolution of Organizations. Process Automation: Building Blocks, the Project Environment. Project **Control and Process Instrumentation:** Server Care Metrics, Management Indicators, Quality Indicators, Life Cycle Expectations Pragmatic Software.

TEXT BOOKS:

1. Walker Rayce, “Software Project Management”, 1998, PEA. Henrey, “Software Project Management”, Pearson

REFERENCE BOOKS:

1. Richard H.Thayer.” Software Engineering Project Management”, 1997, IEEE ComputerSociety.

2. Shere K.D.: “Software Engineering and Management”, 1998, PHI.

3. S.A. Kelkar, “Software Project Management: A Concise Study”, PHI.

4. Hughes Cotterell, “Software Project Management”, 2e, TMH. 88 5. Kaeron Conway“Software Project Management from Concept to D

5. INDIVIDUAL TIME TABLE

Faculty Name: DR RAVI KUMAR CHANDU

Time Table

PERIOD	I	II	III	IV	LUNCH PERIOD	V	VI	VII
DAY/TIME	09:10-10:10	10:10-11:00	11:00-11:50	11:50-12:40	12:40-01:20	01:20-02:10	02:10-03:00	03:00-03:50
Mon		SPM III/II-CSE-A						
Tue			SPM III/II-CSE-A					
Wed						SPM III/II-CSE-A		
Thu							SPM III/II-CSE-A	
Fri							SPM III/II-CSE-A	
Sat								SPM III/II-CSE-A

Subject Allottment

Subject Allottment

	Subject	Course-Branch-Year/Sem-Section	No.of Periods
	SPM	B.Tech-CSE-III-Year/II-Sem-A	6
			Total No. of Periods: 6

6. Session plan/Lesson Plan.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR: 2023-24

SESSION PLAN

LESSON PLAN

Course Number : **CS32024PE** **Course Name : SPM**

Program : **B.Tech** **Branch : CSE**

Year / Semester : **III-II** **Section :** A

S.No	Topic	Proposed Date	Actual Date	Books	Method
UNIT – I					
1	**Conventional Software Management** :	29/01/2024	29/01/2024	T1	M1
2	The waterfall model	30/01/2024	31/01/2024	T1	M1
3	The waterfall model	30/01/2024	31/01/2024	T1	M1
4	Conventional software Management performance.	31/01/2024	31/01/2024	T1	M1
5	Conventional software Management performance.	31/01/2024	31/01/2024	T1	M1
6	**Evolution of Software Economics** :	01/02/2024	01/02/2024	T1	M1

7	Software Economics	02/02/2024	02/02/2024	T1	M1
8	Software Economics	02/02/2024	02/02/2024	T1	M1
9	Pragmatic software cost estimation	03/02/2024	03/02/2024	T1	M1
10	**Improving Software Economics** :	2612/2024	2612/2024	T1	M1
11	Reducing Software product size	06/02/2024	06/02/2024	T1	M1
12	Improving Software Processes	08/02/2024	08/02/2024	T1	M1
13	Improving Software Processes	08/02/2024	08/02/2024	T1	M1
14	TEST	08/02/2024	08/02/2024	T1	M1
15	Improving Team Effectiveness	09/02/2024	09/02/2024	T1	M1
16	Improving Automation	10/02/2024	10/02/2024	T1	M1
17	Achieving Required Quality	12/02/2024	12/02/2024	T1	M1
18	Peer Inspections.	13/02/2024	13/02/2024	T1	M1
UNIT-II					
19	**The old way and the new** :	14/02/2024	14/02/2024	T1	M1
20	The principles of conventional software Engineering	15/02/2024	15/02/2024	T1	M1
21	Principles of modern software management	16/02/2024	16/02/2024	T1	M1
22	Transitioning to an iterative process.	17/02/2024	17/02/2024	T1	M1
23	**Life cycle phases** :	19/02/2024	19/02/2024	T1	M1
24	Engineering and production stages	21/02/2024	21/02/2024	T1	M1
25	Engineering and production stages	21/02/2024	21/02/2024	T1	M1
26	Inception, Elaboration	23/02/2024	23/02/2024	T1	M1
27	Construction, Transition phase	24/02/2024	24/02/2024	T1	M1

UNIT – III					
28	**Artifacts of the process** :	26/02/2024	26/02/2024	T1	M1
29	The artifact sets	28/02/2024	28/02/2024	T1	M1
30	The artifact sets	28/02/2024	28/02/2024	T1	M1
31	The artifact sets	28/02/2024	28/02/2024	T1	M1
32	Management Artifacts	29/02/2024	29/02/2024	T1	M1
33	Engineering Artifacts	24/1/2024	24/1/2024	T1	M1
34	Engineering Artifacts	24/1/2024	24/1/2024	T1	M1
35	Programmatic Artifacts.	01/03/2024	01/03/2024	T1	M1
36	**Model based software architectures** :	02/03/2024	02/03/2024	T1	M1
37	Management perspective and Technical perspective.	04/03/2024	04/03/2024	T1	M1
UNIT – IV					
38	**Work Flows of the process** :	06/03/2024	06/03/2024	T1	M1
39	Software process workflows	11/03/2024	11/03/2024	T1	M1
40	Software process workflows	11/03/2024	11/03/2024	T1	M1
41	Iteration workflows	13/03/2024	13/03/2024	T1	M1
42	Iteration workflows	13/03/2024	13/03/2024	T1	M1
43	**Checkpoints of the process** :	14/03/2024	14/03/2024	T1	M1
44	Major mile stones	15/03/2024	15/03/2024	T1	M1
45	Minor Milestones	16/03/2024	16/03/2024	T1	M1
46	Periodic status assessments	18/03/2024	18/03/2024	T1	M1

47	**Iterative Process Planning** : Work Breakdown Structures	20/03/2024	20/03/2024	T1	M1
48	Planning Guidelines	15/04/2024	15/04/2024	T1	M1
49	cost and schedule estimating	18/04/2024	18/04/2024	T1	M1
50	Iteration Planning Process and Pragmatic planning	22/04/2024	22/04/2024	T1	M1
UNIT – V					
51	**Project Organizations and Responsibilities** : Line-of-Business Organizations	24/04/2024	24/04/2024	T1	M1
52	Project Organizations	25/04/2024	25/04/2024	T1	M1
53	Evolution of Organizations.	27/04/2024	27/04/2024	T1	M1
54	**Process Automation** :	29/04/2024	29/04/2024	T1	M1
55	**Project Control and Process instrumentation** : The seven core Metrics	01/05/2024	01/05/2024	T1	M1
56	The seven core Metrics	01/05/2024	01/05/2024	T1	M1
57	Automation Building blocks	02/05/2024	02/05/2024	T1	M1
58	Automation Building blocks	02/05/2024	02/05/2024	T1	M1
59	Management indicators	03/05/2024	03/05/2024	T1	M1
60	Quality Indicators	06/05/2024	06/05/2024	T1	M1
61	Quality Indicators	06/05/2024	06/05/2024	T1	M1
62	Life Cycle Expectations	07/05/2024	07/05/2024	T1	M1
63	Pragmatic Software Metrics	08/05/2024	08/05/2024	T1	M1

SUBJECT FACULTY **HOD**

METHODS OF TEACHING

M1 : Lecture Method	**M6 : Tutorial**
M2 : Demo Method	**M7 : Assignment**
M3 : Guest Lecture	**M8 : Industry Visit**
M4 : Presentation /PPT	**M9 : Project Based**
M5 : Lab/Practical	**M10 : Charts / OHP**

NOTE:

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

7. SESSION EXECUTION LOG

S no	Units	Scheduled started date	Completed date	Remarks
1	I	29/01/2024	13/02/2024	COMPLETED
2	II	14/02/2024	24/02/2024	COMPLETED
3	III	26/02/2024	04/03/2024	COMPLETED
4	IV	06/03/2024	22/04/2024	COMPLETED
5	V	24/04/2024	08/05/2024	COMPLETED

8. Lecture notes(Hand Written or softcopy printout 5 units) –attached

9. Assignment Questions along with sample Assignments Scripts

Software Project Management

Mid -I Assignment Questions

1. How software projects still practice the conventional software management approach in developing software? (CO1)

2. Compare the conventional, transition and modern software development process in terms of ROI, environment, size and process and predictability using a table? (CO1)

3. What are the key practices that improve overall software quality with a modern process? (CO1)

4. Explain how the size of the teams affect some of the key process primitives like life cycle phases, artifacts, workflow effort allocation, checkpoints, management discipline and automation discipline. (CO2)

5. Write a note on (CO3)

a) Management Artifacts

b) Engineering Artifact

c) Pragmatic Artifacts

Mid –II Assignment Questions

1. Explain in details about software change order?(CO1)

2. Give an example to distinguishing the small scale project and large scale project?(CO2)

3. Explain the good characteristics of Good Metric?(CO3)

4. Explain the checkpoints?(CO2)

5. Explain evolution of software project team over the life cycle models?(CO3)

10. Mid exam Question Papers along with sample Answers Scripts

Software Project Management

I MID Question Paper for the A.Y 2023-24

Year: III . B.TECH , II-SEM **MID EXAMINATIONS-1**

Subject: Software Project Management **Branch: CSE (B.Tech)**

Part –A **Total = 25 Marks**

Answer all Questions: **Marks: 2X5=10M**

- How to improve the Team Effectiveness (CO 1)
- What is Software Economics, What are Five Important parameter of Software Economics? (CO 1)
- Who are Project Stakeholders? (CO 2)
- What is meant by Peer Inspections? (CO 1)
- What is Artifact? What are different types of Artifact sets? (CO 3)

Part –B

Answer any 3 Questions: Marks: 3X5=15M

1. Write the principles of achieving Required Quality of the software? (CO 1)
2. How software projects still practice the conventional software management approach in Developing softwares ? (CO 1)
3. Differentiate between metaprocess, macroprocess and microprocess? (CO 2)

4. Write the advantages and disadvantages of commercial components versus custom Software. (CO 2)
5. **Explain artifact evolution over the life cycle Models? (CO 3)**

II MID Question Paper for the A.Y 2023-24

Year: III . B.TECH , II-SEM **MID EXAMINATIONS-2**

Subject: Software Project Management **Branch: CSE (B.Tech)**

Part –A **Total = 25 Marks**

Answer all Questions: **Marks: 2X5=10M**

1. What is change order Database? (CO 1)
2. List the Management Artifacts? (CO2)
3. Define Periodic Status Assessment? (CO 2)
4. Define Rework and Adaptability (CO 1)
5. What are the 4 component teams in a default project organization and their responsibility? (CO 3)

Part –B

Answer any 3 Questions: Marks: 3X5=15M

6. Discuss in details about Software Development Plan? (CO 1)
7. Discuss about Major Milestones in software Life cycle ? (CO 1)
8. How are checkpoint are decided Explain with Example? (CO 2)
9. Discuss the two perspective of deriving the project plan. (CO3)
10. Explain evolution of software project team over the life cycle Models? (CO 3)
11. List the Attributes of 7 Core Metrics. (CO4)

11. Scheme of Evaluation

MID-I

SCHEME OF EVALUATION

S.NO	THEORY	MARKS	TOTAL MARKS
	PART-A		
1	How to improve the Team Effectiveness	2	2
2	What is Software Economics, What are Five Important parameter of Software Economics?	2	2
3	Who are Project Stakeholders?	2	2
4	What is meant by Peer Inspections?	2	2
5	What is Artifact? What are different types of Artifact sets?	2	2
	PART-B		
6	Write the principles of achieving Required Quality of the software?	5	5
7	How software projects still practice the conventional software management approach in Developing softwares ?	5	5

8	Differentiate between metaprocess, macroprocess and microprocess?	5	5
9	Write the advantages and disadvantages of commercial components versus custom Software	5	5
10	Explain artifact evolution over the life cycle Models?	5	5

MID-II

S.NO	THEORY	MARKS	TOTAL MARKS
	PART-A		
1	What is change order Database?	2	2
2	List the Management Artifacts?	2	2
3	Define Periodic Status Assessment?	2	2
4	Define Rework and Adaptability	2	2
5	What are the 4 component teams in a default project organization and their responsibility?	2	2
	PART-B		
6	Discuss in details about Software Development Plan?	5	5
7	Discuss about Major Milestones in software Life cycle ?	5	5
8	How are checkpoint are decided Explain with Example?	5	5
9	Discuss the two perspective of deriving the project plan.	5	5
10	Explain evolution of software project team over the life cycle Models	5	5
11	List the Attributes of 7 Core Metrics	5	5

12. Mapping of COs with POs and PSO's

Course Outcomes	**Relationship of Course Outcomes (CO) to Program Outcomes (PO)**											
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2										
CO2	3	1			1				2	2		
CO3	1		3		2							
CO4				2	2	2			3		2	

13. CO's, PO's, PSO's Justification

S. No	Course Out Come
CO1	Describe and determine the process and importance of Project management from the perspectives of planning, tracking and completion of project
CO2	Compare and differentiate organization structures and project structures

CO3	Implement a project to manage project scheduling expenses and resource with the application of suitable project management tools
CO4	Create project plans that address real world management challenges

Course Outcomes	**Relationship of Course Outcomes (CO) to Program Outcomes (PO)**											
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2										
CO2	3	1			1				2	2		
CO3	1		3		2							
CO4				2	2	2			3		2	

Justification:

CO1.: Describe and determine the process and importance of Project management from the perspectives of planning, tracking and completion of project
Correlated with PO1 moderately: Because it contributes the knowledge on fundamentals of SPM which makes students get software engineering knowledge and student can categorize different utilities. So, overall the correlation of CO1 to PO1 is good.
Correlated with PO2 moderately: Because it Apply software models for any given project. So, correlation is good.
Correlated with PO11 moderately: Because it demonstrates knowledge and understanding of the Engineering and management Principles. So Correlation of CO1 with PO11 is low

CO2.: Compare and differentiate organization structures and project structures
Correlated with PO1 moderately: Because it provides fundamentals of computer science. So, correlation is good.
Correlated with PO2 moderately: Because it Apply software models for any given project. So, correlation is good.

Correlated with PO5 moderately:
Correlated with PO9 moderately: Because it provides function effectively as an individual for project. So, correlation is average.
Correlated with PO10 moderately: An ability to communicate effectively with a range of audiences

CO3.: Implement a project to manage project scheduling expenses and resource with the application of suitable project management tools.
Correlated with PO1 moderately: Because it provides an engineering specialization to the solution of complex engineering problems. So, correlation is good.
Correlated with PO3 moderately: An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
Correlated with PO5 moderately:
Correlated with PO11 moderately:

CO4.: Create project plans that address real world management challenges
Correlated with PO4 moderately: An ability to design and conduct experiments, as well as to analyze and interpret data.
Correlated with PO5 moderately:
Correlated with PO6 moderately:
Correlated with PO9 moderately: An ability to function effectively individually and on teams, including diverse and multidisciplinary, to accomplish a common goal.
Correlated with PO11 moderately: Because it demonstrates knowledge and understanding of the Engineering and management Principles. So Correlation of CO4 with PO11 is low
Correlated with PO12 moderately: Recognition of the need for and an ability to engage in continuing professional development.

14. Attainment of CO's, PO's and PSO's (Excel Sheet)

After Result

15. Previous Year Question Papers/ Question Bank

UNIT- I

1. Prescribe the conventional and evolution of software.
2. Analyze the importance of improving software economics.
3. Evaluate budget for any small scale projects.
4. Describe the evolution of software economics.
5. Formulate various cost estimation models.

UNIT-II

1. Comprehend the process of managing software from conventional to modern.
2. Catagorize different life cycle phases.
3. Analyse engineering and production stages.
4. Describe various artifact sets.
5. Apply, design & develop the software system process.

UNIT-III

1. Analyse the architecture of a model based software and the process flow
2. Describe various workflows.
3. Summerize the check points of the process.
4. Develop the WBS structure of any project.
5. Illustrate different process planning strategies.

UNIT-IV

1. Analyse the process automation, process management, and its discrminants.
2. Identify seven core metrics.
3. Formulate metric automation.
4. Describe the evolution of organization

UNIT-V

1. Establish modern project profile.
2. Plan and manage projects at each stage of the SDLC.
3. Estimate future technologies of managing software projects.
4. Analyse next generation software economics.

Code No. 6462 / N

FACULTY OF ENGINEERING

B.E. 4/4 (CSE) I – Semester (New) (Main) Examination, December 2013

Subject: Software Project Management (Elective – I)

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

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1. What are the principles of conventional software engineering and modern software engineering? (2)
2. What are the four components teams in a default project organization and their responsibility? (2)
3. How is risk exposure calculated? (2)
4. List two main reasons for stress during project execution. (2)
5. Define process maturity. (2)
6. List out various engineering artifacts. (3)
7. What are the essential activities in construction and transition phases? (3)
8. Identify the main stake holders in a software project that aims at automating the process of library in an engineering college. (3)
9. Explain Agile Methodology. (3)
10. Differentiate between a project and programme with respect to a software project. (3)

PART – B (50 Marks)

11. Explain the following: (10)
    a) Modern process transition.
    b) Leadership styles in software projects.

12.(a) Contrast the PERT and CPM methods of network activity modelling. How does PERT reduce the uncertainty in software project scheduling.
(b) How the costs are categorized in software project management?

13.(a) What are the metrices collected in CCPDS-R? What is the purpose of each metric? (6)
(b) Write short notes of Rigor. (4)

14.(a) What does each of the view (design, process, component, deployment) address in the software architecture? Explain with an example. (7)
(b) Write short notes on stakeholder cohesion. (3)

15. Write short notes on the following:
    a) Modern project profiles. (4)
    b) Next generation software economics (4)
    c) Peer inspections (2)

****

16.(a) What is software architecture from a technical perspective?

(b) Discuss the seven top-level workflows of a software process.

17. Discuss the seven core metrics that should be used on all software projects.

*****

Code No: 137HB **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations,
December - 2019SOFTWARE PROCESS AND PROJECT MANAGEMENT

(Common to CSE, IT)

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

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1. Define initial process. [2]

1. Write brief notes on PSP.[3]
2. What is meant by software economics?[2]
3. Define the term artifact set.[3]
4. Explain cost estimation process.[2]
5. Write brief notes on major milestones in software process.[3]
6. Write about evolution of organizations.[2]
7. Write brief notes on metrics automation.[3]
8. What is meant by early risk resolution?[2]
9. Explain about evolutionary requirements.[3]

PART – B

(50 Marks)

12. Describe the principles of software process change and TSP. [10]

OR

13. Discuss about software process assessment. And also discuss about CMM. [10]

14. Explain about improving software process and improving term effectiveness. [10]

OR

5.a) Explain the principles of conventional software engineering.

b) Describe the phase of software project elaboration. [5+5]

1. Describe the conventional WBS issues and planning guidelines. [10]

OR

2. Explain about the iteration planning process and pragmatic planning. [10]

3. What are the software project quality indicators? Explain them. [10]

OR

4. What is a seven core metrics? Discuss about pragmatic software metrics. [10]

5. What are the software management best practices? Explain them. [10]

OR

6. Discuss about next generation software economics. [10]

Code No: 127HP

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, May/June - 2019
SOFTWARE PROJECT MANAGEMENT
(Common to CSE, IT)

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

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) What is late risk resolution? [2]
b) What are various cost estimation models? [3]
c) What is roundtrip engineering? [2]
d) What are the top five principles of a modern process? [3]
e) Define transition phase. [2]
f) Write the typical release description outline. [3]
g) Define product release milestone. [2]
h) Who are stakeholders? List them. [3]
i) Define rework and adaptability. [2]
j) Describe early risk resolution. [3]

PART-B

(50 Marks)

2.a) What are five necessary improvements in waterfall model? Explain.
b) Describe return on investments in different domains. [5+5]

OR

3.a) Give industrial software metrics top 10 list.
b) Briefly explain pragmatic software cost estimation. [5+5]

4.a) How to improve software processes?
b) What are the principles of modern software management? [5+5]

OR

5.a) Discuss about reuse with a neat diagram.
b) Describe transitioning to an iterative process. [5+5]

6. Explain about model-based architecture in a management perspective. [10]

OR

7.a) Explain about construction phase.
b) Distinguish between implementation set and deployment set. [7+3]

8.a) What are default agendas for the life-cycle architecture milestone? Explain.
b) Discuss about the cost and schedule estimating process. [5+5]

OR

9.a) What are the activities of software architecture team?
b) Explain in detail about software change orders. [5+5]

10.a) What are the seven core metrics? Explain.
b) Give an example to distinguish small scale project and large scale project. [7+3]

OR

11.a) What are the basic characteristics of a good metric? Explain.
b) Give a common subsystem overview of CCPDS-R. [4+6]

--ooOoo—

Code No.: CS623PE | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–II–Semester End Examinations (Regular) - May- 2023
SOFTWARE PROJECT MANAGEMENT
(CSE)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1. a) How to improve team effectiveness? [2M]
   b) Define peer inspections. [2M]
   c) How do you evaluate the completion of each of the four phases in software life cycle? [2M]
   d) What are the essential activities in elaboration phases? [2M]
   e) How an operational artifact of a management set differs from planning artifacts? [2M]
   f) What does each of the views address in the software architecture? [2M]
   g) Define periodic status assessment. [2M]
   h) What is the need of status assessment in software life cycle? [2M]
   i) Many automation tools are available for software development process'. Support your answer. [2M]
   j) What are the four component teams in a default project organization and their responsibility? [2M]

PART-B **(50 Marks)**

2. Explain the waterfall model. What are the necessary improvements for this model? [10M]

OR

3. Discuss the evolution of software economics. [10M]

4. List and explain the principles of conventional software engineering. [10M]

OR

5. Explain the primary objectives of the four phases of software life-cycle. [10M]

6. Discuss in detail about the various engineering artifacts in software project management. [10M]

OR

7. Explain the significance of software architecture in modern software development process. [10M]

8. Discuss briefly about the major milestones in software life cycle. [10M]

OR

9. How are the checkpoints or decided? Explain with an example. [10M]

10. Discuss the evolution of software project team over the software life cycle. [10M]

OR

11. What are the steps in identifying project roles? Name any five project roles and the skills needed for them. [10M]

****

Code No: 127HP

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, May/June - 2019
SOFTWARE PROJECT MANAGEMENT
(Common to CSE, IT)

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

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) What is late risk resolution? [2]
b) What are various cost estimation models? [3]
c) What is roundtrip engineering? [2]
d) What are the top five principles of a modern process? [3]
e) Define transition phase. [2]
f) Write the typical release description outline. [3]
g) Define product release milestone. [2]
h) Who are stakeholders? List them. [3]
i) Define rework and adaptability. [2]
j) Describe early risk resolution. [3]

PART-B

(50 Marks)

2.a) What are five necessary improvements in waterfall model? Explain.
b) Describe return on investments in different domains. [5+5]

OR

3.a) Give industrial software metrics top 10 list.
b) Briefly explain pragmatic software cost estimation. [5+5]

4.a) How to improve software processes?
b) What are the principles of modern software management? [5+5]

OR

5.a) Discuss about reuse with a neat diagram.
b) Describe transitioning to an iterative process. [5+5]

6. Explain about model-based architecture in a management perspective. [10]

OR

7.a) Explain about construction phase.
b) Distinguish between implementation set and deployment set. [7+3]

8.a) What are default agendas for the life-cycle architecture milestone? Explain.
b) Discuss about the cost and schedule estimating process. [5+5]

OR

9.a) What are the activities of software architecture team?
b) Explain in detail about software change orders. [5+5]

10.a) What are the seven core metrics? Explain.
b) Give an example to distinguish small scale project and large scale project. [7+3]

OR

11.a) What are the basic characteristics of a good metric? Explain.
b) Give a common subsystem overview of CCPDS-R. [4+6]

--ooOoo—

Code No.: CY744PE | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
IV–B.TECH–I–Semester End Examinations (Regular) - November- 2023
SOFTWARE PROJECT MANAGEMENT
(CSC)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1. a)	What is software cost Estimation?	[2M]
b)	Define meta process.	[2M]
c)	What is production stage?	[2M]
d)	Define Elaboration Phase.	[2M]
e)	What is artifact set?	[2M]
f)	Define WBS.	[2M]
g)	What is iteration workflow?	[2M]
h)	Define Minor milestone.	[2M]
i)	What is process Automation?	[2M]
j)	What is organization policy?	[2M]

PART-B **(50 Marks)**

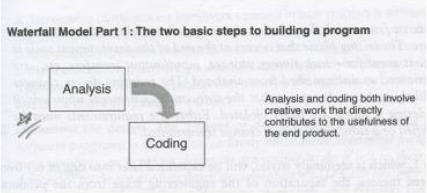
2.	Discuss about waterfall model in detail with neat sketch.	[10M]
	OR	
3.	How should the team be balanced in different dimensions of human skills?	[10M]
4.	What are the pitfalls of the conventional software engineering?	[10M]
	OR	
5.	What are the essential activities in construction and transition phases?	[10M]
6.	Discuss about Requirements Set and Design set.	[10M]
	OR	
7.	What are the three different aspects of software architecture from management's perspective?	[10M]
8.	Discuss about major mile stones in software life cycle.	[10M]
	OR	
9.	Discuss the two perspectives of deriving the project plans.	[10M]
10.	Discuss the evolution of software project team over the software life cycle.	[10M]
	OR	
11.	List the attributes of server core metrics.	[10M]

****

16. Power Point Presentations (PPTs)

Chapter 1: Conventional Software Management

Conventional Software Mgmt.



5

- What is a Project ?
- An individual or collaborative enterprise that is carefully planned to achieve a particular aim.
- "a research project"

Conventional Software Mgmt.

Software Process used:

- **Waterfall model:**
  - Analysis
  - Coding
- **Analysis and coding** are most important steps
- The other steps mostly supplement these steps
- Coding phase is when timing, storage, input/output transfers etc., are experienced

4

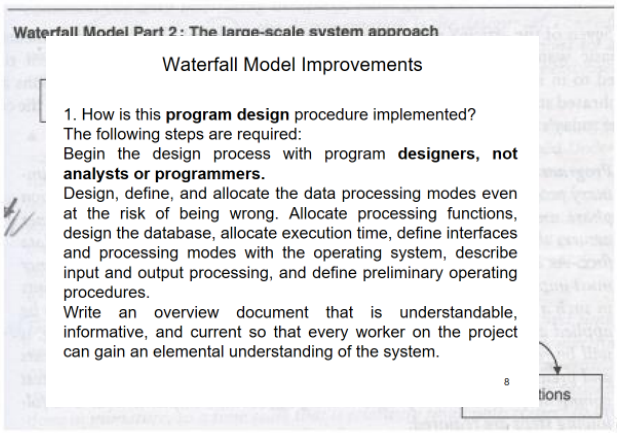
Conventional Software Mgmt

The basic framework described in the waterfall model is risky and invites failure. The testing phase that occurs at the end of the development cycle is the first event for which timing, storage, input/output transfers, etc., are

Improvements suggested in waterfall model:

1. Complete program design before analysis and coding begin.
2. Maintain current and complete documentation.
3. Do the job twice, if possible.
4. Plan, control, and monitor testing.
5. Involve the customer.

7



6

4 . Plan, control, and monitor testing.

even after doing these things, there is still a test phase and there are still important things to be done, including:

(1) employ a team of test specialists who were not responsible for the original design;
(2) employ visual inspections to spot the obvious errors like dropped minus signs, missing factors of two, jumps to wrong addresses (do not use the computer to detect this kind of thing, it is too expensive);
(3) test every logic path;
(4) employ the final checkout on the target computer

5. Involve the customer.

It is important to involve the customer in a formal way so that he has committed himself at earlier points before final delivery.

These include a "preliminary software review" following the preliminary program design step, a sequence of "critical software design reviews" during program design, and a "final software acceptance review".

10

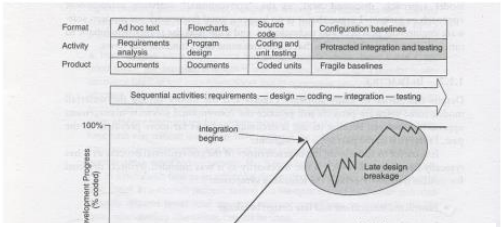
2. Document the design.
Why do we need so much documentation?
(1)Each designer must communicate with interfacing designers, managers, and possibly customers

characteristics of the conventional process - Problems

1. Protracted Integration and Late Design Breakage

- The following sequence was common:
- Early success via paper designs and thorough (often *too thorough) briefings.*
- Commitment to code late in the life cycle.

characteristics of the conventional process - Problems of conventional approach

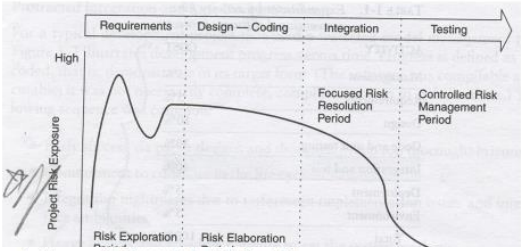


2

TABLE 1-1. *Expenditures by activity for a conventional software project*

ACTIVITY	COST
Management	5%
Requirements	5%
Design	10%

2. Late risk resolution:
A serious issue associated with the waterfall lifecycle was the lack of early risk resolution. The Figure illustrates a typical risk



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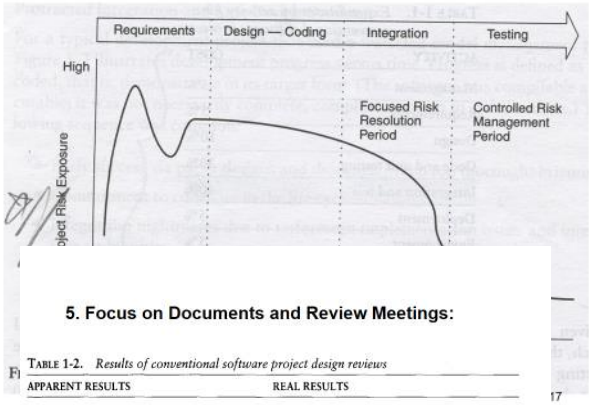

- **4. Adversarial Stakeholder Relationships:**

CONVENTIONAL SOFTWARE MANAGEMENT PERFORMANCE

- **Barry Boehm's "Industrial Software Metrics Top 10 List" is a good, objective characterization of the state of software development.**
- 1. Finding and fixing a software problem after delivery **costs 100 times more than finding and fixing the problem in early design phases.**
- 2. You can compress software development schedules **25% of nominal, but no more.**
- 3. For every **$1 you spend on development, you will spend $2 on maintenance.**
- 4. Software development and maintenance costs are primarily a function of the number of source lines of code

adversarial stakeholder
iculties of requirements
solely through paper
ad hoc formats.

ost contractual software

iversable document that

5. Focus on Documents and Review Meetings:

TABLE 1-2. *Results of conventional software project design reviews*

APPARENT RESULTS	REAL RESULTS
Big briefing to a diverse audience	Only a small percentage of the audience understands the software.

Briefings and documents expose few of the impor

17

2. Evolution of Software Economics

- SOFTWARE ECONOMICS
- The three generations of software development are defined as follows:
- 1) ***Conventional: 1960s and 1970s, craftsmanship. Organizations used custom tools, custom processes, and virtually all custom components built in primitive languages. Project performance was highly predictable in that cost, schedule, and quality objectives were almost always underachieved.***
- 2) ***Transition: 1980s and 1990s, software engineering. Organiz:1tions used more-repeatable processes and off-the-shelf tools, and mostly (>70%) custom components built in higher level languages. Some of the components (<30%) were available as commercial products, including the operating system, database management system, networking, and graphical user interface.***
- 3) ***Modern practices: 2000 and later, software production. This book's philosophy is rooted in the***
- use of managed and measured processes, integrated automation environments, and mostly
- (70%) off-the-shelf components. Perhaps as few as 30% of the components need to be custom
- built

23

2. Evolution of Software Economics

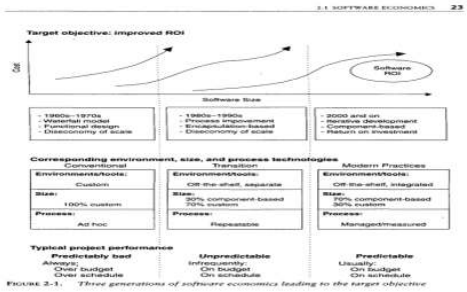

FIGURE 2-1. *Three generations of software economics leading to the target objective*

- SOFTWARE E
- Most software
parameters: **si**
- 1. The ***size c***
typically qua
number of fu
- 2. The ***proces***
process to a
communicati
- 3. The capat
experience with the computer science issues and the applications domain issues of the project
- 4. The ***environment, which is made up of the tools and techniques available to support efficient software development and to automate the process***
- 5. The required ***quality of the product, including its features, performance, reliability, and adaptability***

- The relationships among these parameters and the estimated cost can be written as follows:

22

- **Effort = (Personnel) (Environment) (Quality) (Size process)**

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

QUESTIONS

Course Outcome –I

1) Compare the conventional, transition and modern software development process in terms of ROI, environment, size and process and predictability using a table?

2) What are the key practices that improve overall software quality with a modern process?

3) What are the top five principles of modern software management and how are they improvements compared to waterfall model?

Course Outcome –II

4) What are the various phases of modern software process?

5) What are checkpoints and explain the seven top workflows of the software process?

6) Define artifact and artifact set. List all the artifact sets and artifacts including management set of a modern software process.

Course Outcome –III

7) Explain the top-down and bottom-up cost and schedule estimation process using WBS?

8) List the seven core metrics and describe the purpose of each metric?

9) Explain how the size of the teams affect some of the key process primitives like life cycle phases, artifacts, workflow effort allocation, checkpoints, management discipline and automation discipline?

Course Outcome –IV

10) Explain the process of team building in the modern process management? List and explain the top ten management principles?

11) List the various types of contracts and describe the various stages in awarding a contract?

12) List the cultural shifts that are necessary in order for a company to transition into a modern software management process?

Course Outcome –V

13) Explain process improvement and managing the CMM?

14) Describe ISO 12207?

15) Explain program management in detail?

18. References (Text Book/Websites/ Journals)

1. https://www.coursera.org/learn/software-engineering-software-design-and-project-management
2. https://archive.nptel.ac.in/courses/106/105/106105218/

Text Book Link:

T1 :

https://www.edutechlearners.com/download/Software%20Project%20Management.pdf