A

Course File Report

On

"Software Process and Project Management"

In the department of

Information Technology

CMR ENGINEERING COLLEGE

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

Kandlakoya(v),Medchal -501 401

(A.Y. 2021-2022)

COURSE FILE

Subject: **Software Process and project Management**

Year: **IVth B. Tech_ I -SEM**   Branch: **IT**

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1. Department vision & mission:

VISION

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

MISSION

M1. To offer high quality education in Computer Science & Engineering in order to build core competence for the graduates by laying solid foundation in Applied Mathematics, and program framework with a focus on concept building.

M2. The department promotes excellence in teaching, research, and collaborative activities to prepare graduates for professional career or higher studies

M3. Creating intellectual environment for developing logical skills and problem solving strategies, thus to develop, able and proficient computer engineer to compete in the current global scenario.

2. Program Educational outcome (PEO):

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

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

PEO 3: Exhibit professionalism, multidisciplinary teamwork and adapt to current trends by engaging in lifelong learning and practice their profession with legal and ethical responsibilities.

Program Outcome (PO):

- **PO1**. An ability to apply knowledge of computing, mathematics, science and engineering fundamentals appropriate to the discipline.

- **PO2**. An ability to analyze a problem, and identify and formulate the computing requirements appropriate to its solution.

- **PO3.** 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.

- **PO4**. An ability to design and conduct experiments, as well as to analyze and interpret data.

- **PO5**. An ability to use current techniques, skills, and modern tools necessary for computing practice.

- **PO6.** An ability to analyze the local and global impact of computing on individuals, organizations, and society.

- **PO7.** Knowledge of contemporary issues.

- **PO8.** An understanding of professional, ethical, legal, security and social issues and responsibilities.

- **PO9.** An ability to function effectively individually and on teams, including diverse and multidisciplinary, to accomplish a common goal.

- **PO10.** An ability to communicate effectively with a range of audiences.

- **PO11.** An understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects.

- **PO12.** Recognition of the need for and an ability to engage in continuing professional development.

NBA Graduate Attributes

- PO1   Engineering knowledge
- PO2   Problem analysis
- PO3   Design/development of solutions
- PO4   Conduct investigations of complex problems
- PO5   Modern tool usage
- PO6   The engineer and society
- PO7   Environment and sustainability
- PO8   Ethics
- PO9   Individual and team work
- PO10   Communication
- PO11   Project management and finance
- PO12   Life-long learning

Program Specific Outcomes (PSO's)

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

- **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

CO1	Define and determine the purpose and importance of project management from the perspective of planning, tracking and completion of project.
CO2	Compare and differentiate organization structures and project structures.
CO3	Build a project to manage project schedule, emphasis and resources with the application of suitable project management tool.
CO4	Examine the knowledge on defining the roles and responsibilities of the management and technical people.
CO5	Estimate the successful software projects that support organization's strategic goals.

4.SYLLABUS – JNTUH

R18 B.TECH

SOFTWARE PROCESS AND PROJECT MANAGEMENT
(PROFESSIONAL ELECTIVE – III)

B.Tech. IV Year I Sem.	L	T	P	C
Course Code: CS734PE	3	0	0	3

Course Objectives:

- To acquire knowledge on software process management
- To acquire managerial skills for software project development
- To understand software economics

Course Outcomes:

- Gain knowledge of software economics, phases in the life cycle of software development, project organization, project control and process instrumentation
- Analyze the major and minor milestones, artifacts and metrics from management and technical perspective
- Design and develop software product using conventional and modern principles of software project management

UNIT - I

Software Process Maturity

Software maturity Framework, Principles of Software Process Change, Software Process Assessment, The Initial Process, The Repeatable Process, The Defined Process, The Managed Process, The Optimizing Process.

Process Reference Models

Capability Maturity Model (CMM), CMMI, PCMM, PSP, TSP.

UNIT - II

Software Project Management Renaissance

Conventional Software Management, Evolution of Software Economics, Improving Software Economics, The old way and the new way.

Life-Cycle Phases and Process artifacts

Engineering and Production stages, inception phase, elaboration phase, construction phase, transition phase, artifact sets, management artifacts, engineering artifacts and pragmatic artifacts, model-based software architectures.

UNIT - III

Workflows and Checkpoints of process

Software process workflows, Iteration workflows, Major milestones, minor milestones, periodic status assessments.

Process Planning

Work breakdown structures, Planning guidelines, cost and schedule estimating process, iteration planning process, Pragmatic planning.

UNIT - IV

Project Organizations

Line-of- business organizations, project organizations, evolution of organizations, process automation.

Project Control and process instrumentation

The seven-core metrics, management indicators, quality indicators, life-cycle expectations, Pragmatic software metrics, metrics automation.

UNIT - V

CCPDS-R Case Study and Future Software Project Management Practices

Modern Project Profiles, Next-Generation software Economics, Modern Process Transitions.

TEXT BOOKS:
1. Managing the Software Process, Watts S. Humphrey, Pearson Education
2. Software Project Management, Walker Royce, Pearson Education

REFERENCES:
1. An Introduction to the Team Software Process, Watts S. Humphrey, Pearson Education, 2000 Process Improvement essentials, James R. Persse, O'Reilly, 2006

2. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition, TMH, 2006
3. Applied Software Project Management, Andrew Stellman & Jennifer Greene, O'Reilly, 2006.
4. Head First PMP, Jennifer Greene & Andrew Stellman, O'Reilly, 2007
5. Software Engineering Project Management, Richard H. Thayer & Edward Yourdon, 2nd edition, Wiley India, 2004.
   Agile Project Management, Jim Highsmith, Pearson education, 2004

5. SESSION PLAN / LESSON PLAN

S.No	Topic (JNTU syllabus)	Sub-Topic	No.of Lectures Required	Suggested Books	Method of Teaching	Remarks
1	UNIT-I	Software Process Maturity, Maturity Framework	L1,L2	T1	M1	
2		Principles of software process change, Software process assessment	L3,L4	T1	M4	
3		Process reference models, CMM	L5,L6	T1	M4	
4		Capability maturity model integration(CMMI), People capability maturity model(PCMM)	L7,L8	T1	M1	
5						
6		Personal software process(PSP), Team software process(TSP)	L9,L10	T1	M4,M7	
7	UNIT-II	**Conventional Software Management :** The waterfall model	L11, L12	T1 T2	M4	
8		Evolution of software economics Improving Software Economics, The Old Way and the New Way	L13,L14	T1	M1,M4	
9						
10		Life Cycle Phases, Engineering and the production stages (Inception,Elaboration,Construction,transition)	L15,L16	T1	M4	

11		Artifact sets(Management artifacts, Engineering artifacts, pragmatic artifacts)	L17,L18	T1	M4	
12		Model based software architectures	L19	T1	M4	
13	UNIT-III	Software process workflows, Iteration workflows	L20	T1	M4	
14		Major mile stones, Minor Milestones	L21	T1 T2	M4	
15		Periodic status assessments, Process planning	L22	T1 T2	M4	
16		Work breakdown structures, planning guidelines	L23	T1 T2	M4	
17		Cost and schedule estimating, Iteration planning process	L24,L25	T1	M1	
18		Pragmatic planning.	L26	T1	M1	
19	UNIT-IV	Line-of-Business Organizations, Project Organizations, Evolution of Organizations.	L27,L28	T2	M4	
20		Process Automation, Project control and process instrumentation	L29,L30	T2	M4	
21		The seven core Metrics, Management indicators, Quality indicators,	L31,L32	T2	M4	
22		life cycle expectations	L33	T1	M4	
23		pragmatic Software Metrics, Metrics automation.	L34,L35	T1	M7	
24	UNIT-V	CCPDS – R case study and future software project management practices	L36,L37	T1,T2	M4	
25		Modern Project Profiles	L38	T1,T2	M4,M9	
26		Next generation Software economics	L389	T1,T2	M4	
27		Modern process transitions	L40	T1, T2	M4,M9	
28		Revision	L41,L42		M1,M6	
		TOTAL	42			

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**

6. SESSION EXECUTION LOG :

Unit. NO	TOPIC	SCHEDULED DATE	COMPLETED DATE	REMARK S
I	Software Process Maturity & Process Reference Models			
II	Software Project Management Renaissance & Life-Cycle Phases and Process artifacts			
III	Workflows and Checkpoints of process & Process Planning			
IV	Project Organizations & Project Control and process instrumentation			
V	CCPDS-R Case Study			

7. Lecture Notes:

Downloads.rar

8. Assignment Questions Along with sample Assignment Scripts

MID- 1- ASSIGNMENT QUESTIONS

1. a) Define CMMI ?Briefly explain the different levels of CMMI ?(CO1).
   b) Explain the difference between PSP and TSP?(CO2) .

2 a)   Briefly explain about the Principle of software process change ?(CO1)
   b) Explain the concept of software process assessment? (CO3)

3. a) Define Artifact? Write short notes on Engineering Artifacts. (CO2)
   b) Explain about model-based architecture in a management perspective. (CO3)

4. a) Briefly discuss about engineering and production stages. (CO4)
   b) Explain the typical major milestones in the lifecycle of iteration (CO4)

5. a) Explain about periodic status assessments. (CO4)
   b) Discuss the cost and schedule estimating process. (CO4)

MID- II ASSIGNMENT QUESTIONS

1. a) What is meant by workflow of the process? Discuss about iteration workflow?(CO2)
   b) Explain about the iteration planning process and pragmatic planning?(CO2)

2.a) What are default agendas for the life-cycle architecture milestone? Explain.(CO2)

   b) Describe the default role in a software line-of–business organization?(CO2)

3. a) Describe about Software Engineering Process Authority (SEPA).(CO3)

   b) What are the software management best practices? Explain in detail .(CO4)

4. a) Briefly Explain the software project management principles with respect to CCPDS- R case study.(C05)

   b) Explain about top 10 software management principles in details (CO4).

5.a) What are the software project quality indicators? Explain them.(CO5)

  b) Explain about teamwork among stakeholders.(CO6)

9. Mid exam question papers Along with sample Assignment Scripts
MID-I

CMR ENGINEERING COLLEGE
Kandlakoya (v), Medchal Road, Hyderabad -501401

Exam Name :IV.B.TECH I-SEM-I MID EXAMINATIONS   *Date:*

SUBJECT : SPPM   **BRANCH :** IT

<u>**Answer Any Two Questions:**</u>   Marks :2*5=10M

                                                            TIME:1hour

1. a) Explain Software Process Assessment. (CO1)   2.5 M

    b). Define CMMI ?Briefly explain the different levels of CMMI (CO2)   2.5 M

2. a) Explain water fall model in theory and Practice(CO1)   2.5 M

    b) How to improve software processes? (CO2)   2.5 M

3. a) Briefly discuss about engineering and production stages. . (CO4)   2.5 M

    b) Explain about model-based architecture in a management perspective. (CO3)

                                                            2.5 M

4. a) List out the Major Workflows and explain key principles of modern software engineering.

                                                    (CO4)   2.5 M
    b) Explain about periodic status assessments.   (CO4)   2.5 M

MID-II

	CMR ENGINEERING COLLEGE **Kandlakoya (v), Medchal Road, Hyderabad -501401**	

Exam Name :IV.B.TECH I-SEM-I MID EXAMINATIONS   *Date:*

SUBJECT : SPPM   **BRANCH :** IT

Answer Any Two Questions :   **Marks :2*5=10M**

TIME:1hour

1. (a) What is meant by workflow of the process? Discuss about iteration workflow?(CO 3)

   2.5M

   (b)Describe the conventional WBS issues and planning guidelines? (CO 3)   2.5 M

2. (a) Examine the checkpoints of the process. (CO 4)   2.5 M

   (b) Categorize & explain Project Organizations and Responsibilities.(CO 4)   2.5 M

3. (a) Explain about Pragmatic software metrics.(CO 4)   2.5M

   (b) Explain about Quality Indicators. (CO5)   2.5M

4. (a). Discuss about the software project management principles with respect

   to   CCPDS-R   case study (CO6)   2.5 M

   (b) Discuss about Next-Generation Software Economics. (CO6)   2.5 M

10. Scheme of Evaluation

CMR ENGINEERING COLLEGE

Kandlakoya (v), Medchal Road, Hyderabad -501401

IV.B.TECH I-SEM-I MID EXAMINATIONS, DEC-2020   *Date:*
Subject: SPPM   **Branch: IT**   **Time: 1hr**   **Marks: 2X5=10 M**

Scheme of Evaluation

S.NO		THEORY	MARKS	TOTAL
1	a	Software Process Assessment	2.5	5
	b	CMMI Definition	1	
		CMMI Levels	1.5	
2	a	water fall model in theory	1	5
		water fall model in Practice	1	
		Diagram	0.5	
	b	improve software processes	2.5	
3	a	Engineering stages	1	5
		Production stages.	1	
		Diagram	0.5	
	b	model-based architecture in a management perspective	2.5	
	a	List out the Major Workflows	1	5

4		key principles of modern software engineering	1.5	
	b	periodic status assessments	2.5	

11. Mapping of COs with POs and PSO's

COURSE CO-PO&PSO-MATRIX	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO 1	2	2											2	
CO 2	3	1			1				2	2				
CO 3	1		3		2								3	
CO 4				2	2	2			3		2		3	1
CO 5						3					3	2	2	2
CO 6	2										3	2	2	
AVERAGE	2	2	3	2	2	2			2	2	3	2	3	2

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

   NA
13. University Question Papers/ Question Bank

UNIT-1
Short Answer Questions

QUESTIONS	Blooms taxonomy level
1.Explain Principles of Software Process Change?.	Understand
2.Describe about Software Process Assessment?.	Understand

3.Define Initial Process?.	Knowledge
4.Describe about Repeatable Process?.	Knowledge
5. Explain about Managed Process?.	Knowledge
6.Define Optimizing Process?.	Knowledge

Long Answer Questions

1. Distinguish between software process and software project	Understand
2. Discuss in detail the Initial process, the repeatable process and the managed process.?.	Understand
3. What are process reference models? Explain any two of them.?.	Knowledge
4.Explain about the Optimizing Process in details?.	Understand
5.Explain about the PCMM Process Reference Model in details?.	Knowledge

UNIT-2

Short Answer Questions

QUESTIONS	Blooms taxonomy level
1.Explain about the Evolution of Software Economics?.	Knowledge
2.Describe about Life-Cycle Phases?.	Knowledge
3. Describe about inception phase?.	Knowledge
4.Explain about elaboration phase ?.	Knowledge
5. Describe about transition phase?.	Knowledge
6.Define management artifacts?.	Knowledge

Long Answer Questions

1. Explain the risk profile of a conventional software project across its life cycle.?.	Knowledge
2. What is meant by Elaboration phase? Discuss the primary objectives and essential activities of Elaboration phase?.	Understand
3. Discuss briefly the Engineering artifact sets?.	Understand
4. Explain with a neat diagram how various artifacts evolved over the life cycle?.	Understand
5. Explain the pragmatic software metrics?	Understand

UNIT-3

Short Answer Questions

QUESTIONS	Blooms taxonomy level
1.Explain about Iteration workflows?.	Understand
2. Describe about Major milestones?.	Apply
3. Describe about Minor milestones?.	Knowledge

4.Explain congestion control?.	Understand

| 5. Describe abour Work breakdown structures?. | Knowledge |
| 6. Define Pragmatic planning?. | Knowledge |

Long Answer Questions

1. What are major milestone that occur at the transition points between life - cycle phases? Explain them?	Understand
2. Discuss about typical minor milestones in the life cycle of an iteration?.	Knowledg
3.Explain in detail about periodic status assessments	Understand
4.Explain about iteration planning process?.	Understand
5.Describe about Process Planning in details?.	Understand

UNIT-4

Short Answer Questions

QUESTIONS	Blooms taxonomy level
1. Explain about evolution of organizations?.	Knowledge
2. Describe about process automation?.	Knowledge
3.Define about core metrics?.	Knowledge
4.Explain about management indicators?.	Understand
5.Describe about life-cycle expectations?.	Understand

Long Answer Questions

1. What are the key practices that improve overall software quality?.	Understand
2. Describe about Pragmatic software metrics?.	Knowledg
3.Illustrate the congestion control in details?.	Understand
4.Explain in detail about metrics automation?.	Understand
5.Explain Project Control and process instrumentation in detail?.	Understand

UNIT-5

Short Answer Questions

QUESTIONS	Blooms taxonomy level
1.State advantages Next-Generation software Economics?.	Knowledge
2. Explain about Modern Process Transitions?.	APPLY
3. Describe about Future Software Project Management Practices?.	Knowledge
4. Describe the CCPDS-R Case Study?.	Understand
5.Define Modern Project Profiles?.	Understand

Long Answer Questions

1. Discuss clearly the software management team activities, software architecture team activities also software development team activities?	Understand
2. Write short notes on the Next – Generation software economics ?	Understand
3. Write short notes on the Modern process transitions?	Understand

4.Explain in details about Modern Project Profiles?.	Understand
5.Discues about CCPDS-R Case Study?.	Understand

UNITWISE   MCQ :

UNIT-1

1. Capability level in which process area is either not performed or doesn't achieve all goals and objectives defined by CMMI respective level
    a.**Level0:incomplete**   b.Level0:complete

    c. Level1:Performed   d. Level2:Managed

2. Process area in which organizational innovation and deployment casual analysis and resolution is present has level of
    a.**Optimizin**   b. defined   c. managed   d. performed
    g
3. In PSP, component level design is refined and reviewed by
    a.   postmortem b. planning   c. high level design d. **Development**
4. Which of the following is not a maturity level in CMM
    b.   Design   b) Repeatable   c) **Managed**   d) Optimizing
5. TSP recognizes that best software teams are
    a.   user-   b. manager-directed   c. engineer-directed d. self-directed
         directed
6. AOSD stands for_____**Answer:Aspect Oriented Software Development**
7. Framework that encompasses a process, set of methods and an array of tools is termed
    as_____   **Answer: software engineering**

8.According to ISO 9001, the causes of nonconforming product should be **eliminated and identified**
9. At higher recovery_____distillate is produced.   **Answer More :**

10. COTS stands for_____   **Answer: Commercial off-the-shelf**

UNIT-2

1.Quality planning is the process of developing a quality plan for
   a) Team **b) project**c) customers   d) project manager
2. Which of the following is incorrect activity for the configuration management of a

   software system?

   a) Internship management   b) Change management   c) Version management   d)
System

3. An independent relationship must exist between the attribute that can
be measured and the external quality attribute.

4. Which one of the following models is not suitable for accommodating any change?

5. Which model can be selected if user is involved in all the phases of SDLC?
   a)Waterfall Model   b) Prototyping Model   **c) RAD Model**   d) both B &C 6. A 66.6% risk is consider
7.SDLC stands for **Software Development Life Cycle**
8. RAD stands for **Rapid Application Development**
9.Build & Fix Model is suitable for programming exercises of **100-200** LOC
(Line of Code). 10.RAD Model has **5 phases**

UNIT-3

1. Which of the following are parameters involved in computing the total cost
of a software development project?
   a)Hardware and software costs   b) Effort costs
   c) Travel and training costs   **d) All of the mentioned**
2.Which of the following costs is not part of the total effort cost?
   a)Costs of networking and communications   b) Costs of providing heating and lighting office
   space
   c) Costs of lunch time food   d) Costs of support staff

3.What is related to the overall functionality of the delivered software?
   a)Function-related   c)size related metrics
   b) Product-related metrics   d) None of the mentioned
4.It is often difficult to estimate size at an early stage in a project when only

a specification is available

5. Which model is used to compute the effort required to integrate reusable components or program code that is automatically generated by design or program translation tools?

a) An application-composition model   b) A post-architecture model

c) **A reuse model**   d) An early design model

6. A Algorithmic **cost modeling** is developed using historical cost information that relates some software metric to the project cost.

7. A **Algorithmic cost modeling** is developed using historical cost information that relates some software metric to the project cost.

8. **Function-related metrics** related to the overall functionality of the delivered software?

9. **Estimation by analogy t**echnique is applicable when other projects in the same analogy application domain have been completed?

10. **Parkinson's Law** states that work expands to fill the time available

UNIT-4

1. Which of the following is not considered as a risk in project management?

a) Specification delays b) Product competition **c) Testing** d) Staff turnover

2. The process each manager follows during the life of a project is known as

a) Project Management   b) Manager life cycle

c) **Project Management Life Cycle** d) All of the mentioned

3. Inspections and testing are what kinds of Quality Costs?

a) Prevention b) Internal Failure c) External Failure **d) Appraisal**

4 Which of the following is not a core step of Six Sigma?

a) Define **b) Control** c) Measure d) Analyse

5. Software safety is equivalent to software reliability.

a) True **b) False**

6. **testing tools** examine program systematically & automatically

7. Test Archiving Systems testing tool is responsible for documenting programs 8. Beta Testing is done by **Users**

9. Execution Verifier is a dynamic tool that is also known as **Coverage Analyzer** 10. Percentage of modules that were inspected is a part of **Process Metrics**

UNIT-5

1. Standard Enforcer is a
   a)Static   b) Dynamic Testing
   c) Static & Dynamic Testing   d) None of the mentioned
2. Which testing tool does a simple job of enforcing standards in a uniform way of many programs?

   c) Standard Enforcer**d) Both Code Inspector & Standard Enforcer**

3. Which metric gives the idea about the contents on a web page ?
   a) Word Token   **b) Word Count**   c) Word Size   d) Word Length
4. Which of the following is not a classification of the web engineering metric, Web Page Similarity   ?
   a) Content based   b) Link based   c) Usage based   **d) Traffic based**
5. Which of the   following is   not a   web   engineering project metric   ?
   a) Number of Static Content Objects   b) Number of Dynamic Content Objects
   c) Number of Inherited Objects   d) Word Count
6. Link based measures rely on **Hyperlink** structure of a web graph to obtain related pages
7. Reverse engineering is the process of deriving the system design and specification from its **Source code**
8. Transformation of a system from one representational form to another is known as **Re- factoring and Restructuring**
9. Extracting data items and objects, to get information on data flow, and to understand the existing data structures that have been implemented is sometimes called **data analysis**
10. Software mistakes during coding are known as **Bugs**

14. Power Point Presentations (PPTs)

UNIT-1 (CLICK ON SLIDE)

UNIT-2(CLICK ON SLIDE)

SOFTWARE PROJECT MANAGEMENT

Project:

- A project is a group of tasks that need to complete to reach a clear result.

- A project also defines as a set of inputs and outputs which are required to achieve a goal.

- Projects can vary from simple to difficult and can be operated by one person or a hundred.
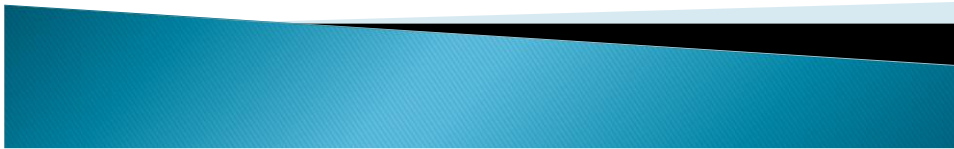
UNIT-3(CLICK ON SLIDE)

UNIT III

WORKFLOWS AND CHECKPOINTS OF PROCESS

UNIT-4(CLICK ON SLIDE)

UNIT-4
Part-1 Project Organizations and Responsibilities

- Line of business (LOB) is a general term which often refers to **a set of one or more highly related products** which serve a particular **customer transaction** or **business needs**
- A LOB application is one of the set of critical computer applications that are vital to run an enterprise
- Software lines of business and project teams have different motivations
    - Software lines of business are motivated by ROI, new business distinguishers, market varieties and profitability
    - Project teams are motivated by the cost, schedule and quality of specific deliverables.
- Software professionals in both types of organizations are motivated by career growth, job satisfaction and the opportunity to make a difference.

"Software Project Management" Walker Royce   1/112

UNIT-5(CLICK ON SLIDE)

UNIT –V

15.WEBSITES / URLs / e- Resources.

1. http://download.benjaminsommer.com/Computer%20Science/Software%20Engineering%20-%20Lecture%20Notes.pdf

2. https://www.youtube.com/watch?v=Do8iykQKMfU

3. https://www.slideshare.net/jhonrehmat/improving-of-software-processes

4.

5. https://slideplayer.com/slide/6128010/

6. https://www.slideshare.net/SachinVasista/characterizing-the-software-process-a-maturity-framework

7. https://www.slideshare.net/shinene2020/people-capability-maturity-model

8. https://www.slideshare.net/AHMPervejKabir/cmmi-55277312

9. https://www.slideshare.net/SpoorthiSham1/software-assessment-and-audit

10. https://www.slideshare.net/SachinVasista/characterizing-the-software-process-a-maturity-framework