# Learning Journal 5

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**Course:** SOEN 6841: Software Project Management
**Journal URL:** https://github.com/DP8801/SOEN_6841_SPM.git
**Dates Rage of activities:** 17th March, 2025 to 28th March
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## Key Concepts Learned:

**Chapter 9: Software Lifecycle Management**

- Lifecycle Models: Waterfall vs Iterative (Scrum, Extreme Programming).
- Concurrent Engineering: Enables parallel development activities.
- Quality Gates: Structured checkpoints ensuring product quality.
- Capability Maturity Model (CMM): Framework to improve software processes across five maturity levels—Initial, Managed, Defined, Quantitatively Managed, Optimizing.

**Chapter 10: Requirements Management**

- Requirements Engineering (RE): Systematic collection, documentation, and management of customer requirements.
- Model-Based RE: Abstract representations of system states (as-is, to-be).
- Functional vs Non-Functional Requirements: Functional (specific features), Non-functional (quality attributes like security, performance).
- Change Management: Systematic handling and validation of requirement changes through traceability.

**Chapters 11-14: Design, Construction, Testing & Release Management**

- Software Design: Approaches include top-down, bottom-up, prototyping, and refactoring.
- Software Construction: Coding standards, programming paradigms (structured, object-oriented, pair programming, test-driven development).
- Software Testing: Importance of verification (correctness of implementation) and validation (correctness of functionality). Automation used selectively to reduce manual effort.
- Release & Maintenance: Product release strategies, documentation, user training, preventive, corrective, adaptive maintenance. Techniques include reverse engineering, re-engineering, and forward engineering.

## Application in Real Projects:

- Iterative Model Adoption: Recommended iterative models (Scrum, XP) in a workplace project, significantly improving response to requirement changes.
- Quality Gates Implementation: Integrated quality gates into current project checkpoints, reducing defects discovered later in the lifecycle.
- Structured Requirement Management: Applied model-based RE and traceability matrices for accurate requirement tracking and impact analysis during software modifications.

| **Peer Interactions:** |
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| • Discussed the challenges and benefits of different lifecycle models; peers favored iterative due to flexibility and ease of requirement incorporation.<br>• Collaborative exploration of automated vs manual testing highlighted consensus that test automation is invaluable in iterative projects.<br>• Shared practical examples of CMM implementations, emphasizing the importance of process maturity in reducing project risks. |
| **Challenges Faced:** |
| 1. Managing Requirement Changes: Struggled initially with systematic change management. Clarified through examples provided in Chapter 10.<br>2. Balancing Automation in Testing: Found it challenging to determine which testing scenarios were suitable for automation; practical guidelines from Chapter 13 aided understanding. |
| **Personal development activities:** |
| • Completed a short online course on "Advanced Software Testing Techniques."<br>• Practiced constructing WBS for complex software tasks and utilized configuration management tools like Git for managing changes. |
| **Goals for the Future:** |
| 1. Deepen understanding of preventive maintenance strategies.<br>2. Explore real-world implementations of reverse engineering.<br>3. Practice designing software architecture models using UML and prototyping methods. |

## Final Reflections:

**Overall Course Impact:** This course significantly expanded my understanding of software project management as an integrated discipline. I moved from viewing software development as isolated tasks to recognizing it as a coherent lifecycle, emphasizing quality, structured processes, and iterative improvements. Insights on lifecycle models, especially iterative methods, profoundly influenced my perspective.

**Application in Professional Life**: Course learnings, particularly requirements management, quality assurance, and lifecycle models, have already been applied in my professional environment. I've successfully incorporated traceability matrices and quality gates, significantly enhancing my team's productivity and reducing project risks.

**Peer Collaboration Insights:** Collaborations with peers offered substantial value, particularly in addressing practical challenges. Discussions enhanced my grasp of real-world applications, especially regarding iterative processes and automation in testing. The varied perspectives improved my analytical and critical thinking skills.

**Personal Growth**:I have seen significant development in my project planning capabilities, requirement management skills, and ability to proactively manage risks. My confidence in managing software projects, understanding software design intricacies, and handling project dynamics has substantially grown, preparing me for advanced responsibilities in software project management.