

ITT Technical Institute
PM4540
Managing Software Development
Projects
Onsite Course

SYLLABUS

Credit hours: 4.5

Contact/Instructional hours: 56 (34 Theory Hours, 22 Lab Hours)

Prerequisite(s) and/or Corequisite(s):

Prerequisite: PM3440 Project Management for Information Technology or equivalent

Course Description:

This course explores basic principles of software development project management. Students will study a variety of software development methods and models. Focus is on application of the software development lifecycle (SDLC) to project planning and management.

Where Does This Course Belong?

The following diagram demonstrates how this course fits in the standard program:

Program Outline:

8th QTR

PM3110 Introduction to Project Management
MA3110 Statistics
PM3140 Systems Analysis

9th QTR

PM3220 Project Communication and Documentation
PY3150 Psychology
PM3225 Project Management Tools and Techniques

10th QTR

PM3320 Project Cost and Budget Management
SS3150 Research Methods
PM3325 Project Quality Management

11th QTR

PM3420 Procurement and Contract Management
EN3220 Written Analysis
PM3440 Project Management for Information Technology

12th QTR

PM4540 Managing Software Development Projects
HU4640 Ethics
PM4530 Management of Global Projects

13th QTR

MG4650 Team Leadership
SP3450 Social Psychology
PM4620 Project Risk Management

14th QTR

SC4730 Environmental Science
PM4795 Project Management and Administration - Information Technology Capstone Project

NOTE: Refer to the catalog for the state-specific course and program information, if applicable.

This course is part of the Bachelor's degree program in Project Management and Administration – Information Technology Option (PMIT). Upon the completion of the program, students are expected to be able to:

- Apply the project management body of knowledge and related skills, tools, and techniques to each of the nine designated areas of integration, scope, time, cost, quality, human resources, communications, risk management and procurement
- Apply the project management body of knowledge and related skills, tools, and techniques to the five process groups of initiating, planning, executing, monitoring and controlling and closing
- Given a case study or simulation, develop and use appropriate documentation including initiating forms, planning forms, executing forms monitoring and control forms and closing forms for successful completion of information technology projects
- Communicate efficiently and effectively with the IT project team and the other project stakeholders
- Appreciate and adapt to cultural differences among the stakeholders
- Apply the Code of Professional Conduct to all projects
- Recognize and adapt to technical trends in information technology
- Apply critical thinking and analysis as a project team member

Course Summary

Major Instructional Areas

1. The complex nature of software development projects
2. Business and organizational contexts of software development projects
3. Models of managing software development projects
4. Project scoping and planning
5. Estimation techniques
6. Measuring and controlling products
7. Measuring and controlling processes
8. Managing project risk
9. Team dynamics and coordination

Course Objectives

1. Describe a generic software development lifecycle.
2. Analyze the mission critical components of a software development project.
3. Analyze business, organizational and technical constraints of a software development project.
4. Apply estimation techniques to the design and management of the software development project.
5. Apply measuring and controlling processes to managing a software development project.
6. Analyze risks of a software development project.
7. Define a mitigation strategy for the software development project.
8. Manage the team dynamics of a software development project.
9. Evaluate the quality of the software development project.

Learning Materials and References

Required Resources

Complete Textbook Package	New to this Course	Carried over from Previous Course(s)	Required for Subsequent Course(s)
Fairley, R. (2009). <i>Managing and leading software projects</i> . (IEEE Computer Society). Hoboken, NJ: John Wiley & Sons, 2009.	■		■

ITT Tech Virtual Library (accessed via Student Portal | <https://studentportal.itt-tech.edu>)

Search using Books 24x7:

Amason, A. and et al. (2007). *The human side of project leadership*. Project Management Institute.

Callahan, K., Stetz, G., and Brooks, L. (2011). *Project management accounting: Budgeting, tracking, and reporting costs and profitability* (2nd ed). Hoboken, NJ: John Wiley and Sons, Inc.

Concepts, Management (2009). *The 77 deadly sins of project management*. Management Concepts.

Heldman, K. and Mangano, V. (2011) *PMP: Project management professional exam review guide* (2nd ed.) Hoboken, NJ: John Wiley and Sons, Inc./ Sybex.

Moustafaev, J. (2011). *Delivering exceptional project results: A practical guide to project selection, scoping, estimation, and management*. Ft. Lauderdale, FL: J. Ross Publishing

Wysocki, R (2009). *Effective project management: Traditional, agile, extreme* (6th ed.) Hoboken, NJ: John Wiley and Sons, Inc.

NOTE: All links are subject to change without prior notice.

Information Search

Use the following keywords to search for additional online resources that may be used for supporting your work on the course assignments:

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- Software development project
- Project scope
- Project plan
- Estimating

- Project Risk
- Team dynamics
- Project lifecycle
- Measuring and controlling processes

Suggested Learning Approach

In this course, you will be studying individually and within a group of your peers. As you work on the course deliverables, you are encouraged to share ideas with your peers and instructor, work collaboratively on projects and team assignments, raise critical questions, and provide constructive feedback.

Use the following advice to receive maximum learning benefits from your participation in this course:

DO	DON'T
<ul style="list-style-type: none"> ▪ Do take a proactive learning approach ▪ Do share your thoughts on critical issues and potential problem solutions ▪ Do plan your course work in advance ▪ Do explore a variety of learning resources in addition to the textbook ▪ Do offer relevant examples from your experience ▪ Do make an effort to understand different points of view ▪ Do connect concepts explored in this course to real-life professional situations and your own experiences 	<ul style="list-style-type: none"> ▪ Don't assume there is only one correct answer to a question ▪ Don't be afraid to share your perspective on the issues analyzed in the course ▪ Don't be negative about the points of view that are different from yours ▪ Don't underestimate the impact of collaboration on your learning ▪ Don't limit your course experience to reading the textbook ▪ Don't postpone your work on the course deliverables – work on small assignment components every day

Course Outline

Unit 1: Introduction to Software Project Management			
Upon completion of this unit, the students are expected to:			
<ul style="list-style-type: none"> • Explain the challenges in managing software projects • Describe a typical organizational structure for a project team • Compare the differences between the CMMI, ISO, IEEE, and PMI guidelines for software project management 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapter 1	Assignment	Unit 1 Assignment 1: Difficulty in Managing Software Projects	3%
		Unit 1 Assignment 2: Organizational Structures for Software Projects	3%
	Exercise	Unit 1 Exercise 1: CMMI, ISO, IEEE, and PMI Comparison	3%

Unit 2: Process Models for Software Development			
Upon completion of this unit, the students are expected to:			
<ul style="list-style-type: none"> • Differentiate between system engineering and software engineering • Explain in detail the incremental build model, evolutionary model, agile development model, scrum model, and spiral meta-model for software development • Choose a suitable iterative software development model based on the project and the organizational structure 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapter 2	Assignment	Unit 2 Assignment 1: System Engineering vs. Software Engineering	3%
		Unit 2 Assignment 2: Iterative Software Development Process Models	3%
	Exercise	Unit 2 Exercise: Choosing an Iterative Software Development Model from a Case Study	3%

Unit 3: Establishing Project Foundations

Upon completion of this unit, the students are expected to:

- Analyze projects to determine whether to customize existing software or build new software
- Explain the complexity in requirements engineering
- Limit the scope of a project within time, economic, and project team constraints

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapter 3	Assignment	Unit 3 Assignment 1: Buy vs. Build Analysis	3%
		Unit 3 Assignment 12: Developing and Analyzing Requirements	3%
	Exercise	Unit 3 Exercise 1: Project Scope and the Buy vs. Build Case Study	3%

Unit 4: Plans and Planning for Projects

Upon completion of this unit, the students are expected to:

- Explain the importance of having a management plan template
- Justify the requirement of flexibility in management plans
- Construct a software project management plan

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapter 4	Assignment	Unit 4 Assignment 1: Agile Project Plans	3%
		Unit 4 Assignment 2: Defining a Project Management Plan Template	3%
	Exercise	Unit 4 Exercise 1: Creating a Software Project Management Plan	3%

Unit 5: Project Planning Techniques

Upon completion of this unit, the students are expected to:

- Explain the Rolling-Wave planning process
- Define Resource-Gantt charts and why they exist
- Develop a project schedule based on realistic constraints

READING	GRADED ACTIVITIES / DELIVERABLES		
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ASSIGNMENT	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapter 5	Assignment	Unit 5 Assignment 1: Rolling-Wave Planning Process	3%
		Unit 5 Assignment 2: Resource-Gantt Charts	3%
	Exercise	Unit 5 Exercise 1: Developing a Project Schedule from a Case Study	3%

Unit 6: Project Cost Estimation Techniques

Upon completion of this unit, the students are expected to:

- Differentiate between pragmatic software estimation techniques
- Describe commonly-used software estimation models
- Rationalize the choice of a software cost estimation tool

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapter 6	Assignment	Unit 6 Assignment 1: Estimation Techniques	3%
		Unit 6 Assignment 2: Estimation Models	3%
	Exercise	Unit 6 Exercise 1: Choosing an Estimation Tool	3%

Unit 7: Measuring and Controlling Work Products

Upon completion of this unit, the students are expected to:

- Define what attributes of a product should be measured based on project constraints
- Quantify software defects in a product
- Describe the measurements used in practical software development

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapter 7	Assignment	Unit 7 Assignment 1: Measuring Product Attributes	3%
		Unit 7 Assignment 2: Measuring Software Defects	3%
	Exercise	Unit 7 Exercise 1: Choosing Product Measures	3%

Unit 8: Measuring and Controlling Work Processes			
Upon completion of this unit, the students are expected to:			
<ul style="list-style-type: none"> • Explain the measurable effort in software development • Track the measurable effort in software development • Explain how “earned value reporting” is used 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapter 8	Assignment	Unit 8 Assignment 1: Measuring Effort and Rework Effort	3%
		Unit 8 Assignment 2: Tracking Effort and Cost	3%
	Exercise	Unit 8 Exercise 1: Earned Value Reporting Case Study	3%

Unit 9: Managing Project Risk			
Upon completion of this unit, the students are expected to:			
<ul style="list-style-type: none"> • Differentiate conventional and contemporary project management techniques • Identify risk mitigation strategies • Contrast risk identification techniques 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapter 9	Assignment	Unit 9 Assignment 1: Conventional Project Management	3%
		Unit 9 Assignment 2: Risk Mitigation Strategies	3%
	Exercise	Unit 9 Exercise 1: Identifying Risk in a Case Study	3%

Unit 10: Teams, Teamwork, and Organizational Issues
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Upon completion of this unit, the students are expected to: <ul style="list-style-type: none"> • Distinguish between managing and leading teams • Differentiate Jungian and MBTI personality types • Create guidelines for organizing and leading software development teams 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Chapters 10-11	Assignment	Unit 10 Assignment 1: Managing, Leading, and Teams	3%
		Unit 10 Assignment 2: Personality Styles	3%
	Exercise	Unit 10 Exercise 1: Guidelines for Leading Software Engineering Teams	3%

Unit 11: Review and Final Exam			
Upon completion of this unit, the students are expected to: <ul style="list-style-type: none"> • Perform a self-assessment on knowledge of managing software development teams 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
Fairley, Review Chapters 1-11	Exam	Final Examination	10%

Evaluation and Grading

Evaluation Criteria

The graded assignments will be evaluated using the following weighted categories:

Category	Weight
Assignment	60%
Exercise	30%
Exam	10%
TOTAL	100%

Grade Conversion

The final grades will be calculated from the percentages earned in the course, as follows:

Grade	Percentage	Credit
A	90–100%	4.0
B+	85–89%	3.5
B	80–84%	3.0
C+	75–79%	2.5
C	70–74%	2.0
D+	65–69%	1.5
D	60–64%	1.0
F	<60%	0.0

Academic Integrity

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct, including plagiarism, self-plagiarism, fabrication, deception, cheating, and sabotage. For more information on the academic honesty policies, refer to the Student Handbook and the Course Catalog.

(End of Syllabus)