
17-653

**MANAGING SOFTWARE
DEVELOPMENT
COURSE INFORMATION**

FALL 2016

Miranda & Root

Revised: 07/20/2015

Class Meetings

Tuesday and Thursdays 10:30 - 11:50 am

Room 265, 300 S. Craig St.

Instructors

Dave Root droot@cs.cmu.edu Rm 272 (x8-5198) Office Hours: by appointment	Eduardo Miranda mirandae@andrew.cmu.edu Rm 268 (x8-8450) Office Hours: by appointment	Mel Rosso-Llopart rosso@cs.cmu.edu Rm. 270 (x8-4629) Office hours: by Appointment
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Teaching Assistants

Abhijit "Sam" Hota ahota@andrew.cmu.edu Office Hours: Thursday, 3 P.M. - 4 P.M., Coach Library	Suganthan Dhanasekaran sdhanase@andrew.cmu.edu Office Hours: By Appointment
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Objectives

Large scale software development requires the ability to manage resources - both human and computational — through control of the development process. This course is a breadth oriented course, designed to help technically-trained software engineers to acquire the knowledge and skills necessary to lead a project team, understand the relationship of software development to overall project engineering, estimate time and costs, and understand the software process. The nature of software development is sufficiently unique to require specialized management techniques, especially in the areas of the estimating and scheduling.

Organization

This course is structured around lectures (~55%) and case studies (~45%). Student participation is critical part of the course content and is an essential part of the student's grade.

Communication

Office hours, Email, BlackBoard: www.cmu.edu/blackboard (login with your andrew ID)

Grading

- Participation: 10% (attendance and class discussions)
- Questions on Readings: 10%
- Case Studies: 60% (40% individual, 20% group)
- Final Report: 20%

Texts

1. Tsui and Karam (T&K), "Essentials of Software Engineering, Third edition," Jones and Barrlet Publishing, 2013. ISBN-13 : 978-1449691998
2. Pressman, Roger S., "Software Engineerin, A Practioner's Approach, Eighth edition," McGraw Hill, ISBN-13: 978-0078022128

Cases and Readings you will have to buy

These are case studies and readings you will need to buy from Harvard Business Review online. These typically cost \$3.95 each and can either be sent to you hard copy or downloaded. The link to the course material is:

<http://cb.hbsp.harvard.edu/cbmp/access/50419484>

You will have to register with the site. Email me if you have any problems.

1. Microsoft Corporation: Office Business Unit 691033-PDF-ENG
2. Leadership that gets results R00204-PDF-ENG
3. The Satera Team at Imatron Systems, Inc. (A) 803141-PDF-ENG
4. Cimetrics Technology (A1) 399108-PDF-ENG
5. What You Can Learn from the People Who Manage the People Who Write Software U9608A-PDF-ENG
6. Put Customers to Work: Determining the Right level of Customer Engagement 3828BC-PDF-ENG

Assignments are always due before class on the day noted unless otherwise shown under the Exercise/Assignment!

Date	Session Slides / Supplemental material	Exercise / Assignment (Look in assignments page for files/links)
Course Overview Instructor Dave Root		
8/30	Course Overview MSD Introduction OBU Case Introduction	Read: Tsui Ch's 1-3 Pressman Ch 1(7th ed.) , 1&2 (8th ed.) Assignment: Reading Questions RQ intro due 9/1 (yes, just 2 days from now)
9/1	CASE Exercise Discussion Study	Case study: HBR MS OBU Assignment (inividual): Case OBU Indv
Software Engineering People Issues – Instructor Dave Root		
9/6	Managing Technical People Supplemental reading: " the smart ignoramus " by Dan Berry	Take online personality test, bring results to class: http://www.humanmetrics.com/cgi-win/JungType.htm Read: Pressman Chapter 6 Singing for Themselves Leadership is critical in IT Participative Leadership HBR "What You Can Learn from People Who Manage the People Who Write Software" HBR "Leadership that Gets Results" Hofstede Country Comparison http://geert-hofstede.com/countries.html Assignment: RQ MTP
9/8	Team formation, Decision Making and Conflict Resolution	Hoover & Taran: Why Software Engineers should study human behavior Read HBR Satera Team

9/13	CASE Exercise Discussion Study	Assignment (Group): Case MTP Satera Team Group
9/15	Managing Customer Expectations	Read: The Art of Expectations Management HBR "Put Customers to Work: Determining the Right level of Customer Engagement" Assignment: RQ MCE
9/20	MCE Case discussion	Assignment (individual): Case MCE Gigaplex Indv Case: Hoover etal Gigaplex
Requirements Management - Instructor: Dave Root		
9/22	Requirements Management <i>Supplemental References:</i> CCB charter template Change Control Process IEEE Standard 830 1998 In Search of Excellent Requirements Issues in Requirements Requirements Review Checklist Why do Requirements Change Writing Quality Requirements	Read : Pressman Ch's 8 & 9, skim 10, 11 & 13 Tsui and Karam Ch 6 SEI Technical Report (TR) 12.92 (skim sections 1 through 6) SEI TR 03tr016 (skim entire report) Assignment: RQ Requirements due 9/27

9/27	CASE Exercise Discussion Requirements case study/lecture Guest lecturer/Discussion lead: Tony Lattanze	<p>Read Davey Parker and Lattanze 08 Requirements Assignment (individual): Requirements Assignment and PBJ THIS IS NOT A RQ! Treat it as an assignment please.</p> <p>Don't forget the PBJ assignment is a separate submission. BRING A HARD COPY TO CLASS!</p> <p>Note: this has 2 parts. The first part has no page limit and WHILE SIMILAR TO A RQ IT IS NOT. Please put some effort into it. The second part requires you to write 1 page, to be uploaded separately. In addition bring a hard copy to class. Remember this second part is only on the requirements and process of making a peanut butter and jelly sandwich. We will use this in class. Seems simple but the more effort you put in the better the class.</p>
Processes/Lifecycles - Instructor Dave Root		
9/29	Defining and measuring Processes	<p>Pressman Ch 32 Tsui and Karam Ch 11, skim Ch 10 Scoreboard, Mota 2008 Basili et al: Goal Question Metric Approach Skim/review: IEEE 730 standards for Software Quality Assurance Fagan 2002 Assignment: RQ Define process</p>
10/4	CASE Exercise Discussion Study	<p>Case Study: Sutherland: Tale of Three Processes at Tartan Assignment (group): Case Defining Process at Tartan</p>
10/6	Software Development Lifecycles	<p>Read: STCS Lifecycle Comparison Iterative vs. waterfall software development (Computer World 2004) Assignment: RQ SDLC and Process Frameworks</p>
10/11	Introduction to Process frameworks & How to Choose <i>Supplemental Readings:</i>	<p>Read: Pressman Ch's 3, 4 & 5 Tsui & Karam Ch's 4, 5 & skim 7</p>

	Agile Lessons Learned XP on a large Project	The CMMI Concept: awprofessional-articles RUPvsXP Extreme Programming: A Gentle Introduction: extreme programming Scrum Overview RUP, OUP, AUP... ACDM: CMU-ISRI-05-103 Case Study: Analysis of the Denver International Airport Baggage System HBR OBU Recommended Reading: "Agile Review and Analysis of Methods"
10/13	Process Frameworks and How to choose	Rockwood paper: Choose Your Weapon Wisely Also due: Individual Project Paper TOPIC due. Simple topic and description, no more than a paragraph. If you have an initial bibliography, then please include it, but it isn't required at this point. I want to see what you are thinking about for the paper, and WHY. Final Paper
10/18	CASE Exercise Discussion Study	Assignment: Case SDLC Process (group)
Risk Management - Instructor: Dave Root		
10/20	Identifying and Managing Software Risk	Read : Pressman Chapter 35 VanScoy Software Development Risk: Opportunity, Not Problem Will, Software Risk Management. Skim: SEI Continuous Risk Management Guidebook Carr Taxonomy Based Risk Identification SEI Short Taxonomy Based Questionnaire

		<p>Nelson et al Agile Risk Management</p> <p>Assignment: RQ Risk</p>
10/25	<p>Guest Lecture Mel Rosso-Llopart</p> <p>TBQ, Threshold of Success Risk statement discussion</p>	<p>Read Taran Threshold of Success Re-read the HBR OBU case Each student bring your top 2 risks from the OBU case for discussion in the class. We'll break into groups in the class for the exercise.</p>
10/27	<p>CASE Exercise Discussion Study Risk</p>	<p>Case Study HBR Cimetrics Assignment (Group): Case Risk group</p>
Project Management – Instructors Eduardo Miranda and Mel Rosso-Llopart		
11/1	<p>Introduction – Planning & Controlling Software Development Projects</p>	<p>Pressman, Chapter 30 & 32</p> <p>Time Reporting System Description</p>
11/3	<p>Activity Planning</p>	<p>Pressman, Chapter 34</p> <p>DSMC Scheduling Guide For Program Managers Cutter Critical Chain</p>
11/8	<p>Milestone Planning</p>	<p>Assignment due (individual): Critical Path Individual Andersen, Warning: activity planning is hazardous to your project's health!</p>
11/10	<p>Work Breakdown Structures</p>	<p>Assignment due (individual) : MilestonePlanning Individual Parviz Rad, Advocating a deliverable-oriented work breakdown structure</p>

		Shlomo Globerson, Impact of various work-breakdown structures on project conceptualization
11/15	Estimation Methods (1)	Pressman, Chapter 33 Jorgensen & Boehm - Software Development Effort Estimation: Formal Models or Expert Judgment? Longstreet Fundamentals of FP Grenning, Planning Poker
11/17	Student presentations (2 groups) Estimation Methods (2)	Assignment (group): WBS Group Jones Manual Estimating Methods Cocomo II Model Definition Manual
11/22	Release Planning	Miranda Timeboxing Planning: Buffered Moscow Longstreet02.pdf
11/24 No Class - Thanksgiving Holiday		
11/29	Tracking Reporting & Controlling: Lecturer Mel Rosso-Llopart	Assignment (individual): Function Point Count for the Time Reporting System & COCOMO estimation Lukas EVA - Why it Doesn't Work Barton Reporting Scrum Project Progress to Executives Unk, Tracking Agile SEI, Data Specification for Software Project Performance Measures: Results of a Collaboration on Performance Measurement
12/1	Tracking, Reporting & Controlling II	
12/6	Guest Lecture TBD	Assignment (individual): Tracking v2
12/8	Make up Snow day if needed	Final Paper Due: Papers due by Start of Class. Don't forget to upload it to BlackBoard.

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