UNIVERSITY OF THE PEOPLE
The Education Revolution

CS 4403: Software Engineering 2

Syllabus

Prerequisites: CS 2401: Software Engineering 1.

Course Description: This course addresses more advanced topics in software engineering. Topics include the study of project planning, techniques for data-oriented design, object-oriented design, testing and quality assurance, and computer-aided software engineering.

Required Textbook and Materials: UoPeople courses use open educational resources (OER) and other materials specifically donated to the University with free permissions for educational use. Therefore, students are not required to purchase any textbooks or sign up for any websites that have a cost associated with them. The main required textbooks for this course are listed below, and can be readily accessed using the provided links. There may be additional required/recommended readings, supplemental materials, or other resources and websites necessary for lessons; these will be provided for you in the course's General Information and Forums area, and throughout the term via the weekly course Unit areas and the Learning Guides.

- Conger, S. (2008). The New Software Engineering. GlobalText Project. This book is licensed under a Creative Commons Attribution 3.0 License. Download from below:
    - Conger - Chapters 1-9
    - Conger - Chapters 10 - End
- Jenkins, N. (2005). A Project Management Primer. This work is licensed under the Creative Commons (Attribution-NonCommercial-ShareAlike) 2.5 License. Download from this link.

Supplemental Textbook and Materials:

- NIST Publication 800-64 System Development Life Cycle (SDLC)
- NIST Interagency Report 7864: The Common Misuse Scoring System (CMSS): Metrics for Software Feature Misuse Vulnerabilities

Software Requirements/Installation: Computer with Windows XP or Windows 7 Operating System.

Learning Objectives and Outcomes:

By the end of this course students will be able to:

1. Learn common behaviors that contribute to the effective functioning of a team.
2. Interpret a given requirements model for a simple software system.
3. Construct models of the design of a simple software system that are appropriate for the paradigm used to design it.
4. Describe secure coding and defensive coding practices.
5. Distinguish between program validation and verification.
6. Learn about new software development techniques like Agile and Scrum
7. Implement code quality standards using metrics and tools
8. Describe different security standards used in software design

Course Schedule and Topics: This course will cover the following topics in eight learning sessions, with one Unit per week. The Final [?] .n will take place during Week/Unit 9 (UoPeople time).

- **Week 1: Unit 1 -** Project Planning
- **Week 2: Unit 2 -** Project Initiation, Analysis and Design
- **Week 3: Unit 3** - Process Oriented Analysis and Design
- **Week 4: Unit 4 -** Data Oriented Analysis and Design
- **Week 5: Unit 5 -** Object Oriented Design and Analysis
- **Week 6: Unit 6 -** Implementation and Maintenance, Testing and Quality Assurance
- **Week 7: Unit 7 -** Change Management
- **Week 8: Unit 8 -** Security by Design
- **Week 9: Unit 9 -** Course Review and Final Exam

Learning Guide: The following is an outline of how this course will be conducted, with suggested best practices for students**.**

Unit 1: Project Planning

- Read the Learning Guide and the Reading Assignment
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Complete and submit the Programming Assignment
- Make entries to the Learning Journal
- Take the Self-Quiz

Unit 2: Project Initiation, Analysis and Design

- Peer assess the Unit 1 Programming Assignment
- Read the Learning Guide and the Reading Assignment
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Complete and submit the Programming Assignment
- Make entries to the Learning Journal
- Take the Self-Quiz

Unit 3: Process-Oriented Analysis and Design

- Peer assess Unit 2 Programming Assignment
- Read the Learning Guide and Reading Assignments
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Complete and submit the Programming Assignment
- Make entries to the Learning Journal
- Take the Self Quiz

Unit 4: Data Oriented Design and Analysis

- Peer assess Unit 3 Programming Assignment
- Read the Learning Guide and Reading Assignments
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Make entries to the Learning Journal
- Take the Self-Quiz
- Take the Graded Quiz

Unit 5: Object Oriented Design and Analysis

- Read the Learning Guide and Reading Assignments
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Complete and submit the Programming Assignment
- Make entries to the Learning Journal
- Take the Self-Quiz

Unit 6: Implementation and Maintenance, Testing and Quality Assurance

- Peer-assess Unit 5 Programming Assignment
- Read through the Learning Guide and the Reading Assignment
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Complete and submit the Programming Assignment

- Submit the Learning Journal
- Take and submit the Self-Quiz

Unit 7: Change Management

- Peer-assess the Unit 6 Programming Assignment
- Read the Learning Guide and Reading Assignments
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Make entries to the Learning Journal
- Take the Self-Quiz
- Take the Graded Quiz

Unit 8: Security by Design

- Read the Learning Guide and Reading Assignments
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Make entries to the Learning Journal
- Take the Self-Quiz
- Read the Unit 9 Learning Guide carefully for instructions on the Final Exam
- Take the Review Quiz
- Complete and submit the anonymous Course Evaluation

Unit 9: Course Review and Final Exam

- Read the Learning Guide and take the Review Quiz, if you haven't already done so
- Prepare for, take, and submit the Final Exam
- The Final Exam will take place during the Thursday and Sunday of Week/Unit 9 (UoPeople time); exact dates, times, and other details will be provided accordingly by your instructor

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Course Requirements:

Programming Assignments

Some units in this course require that you complete Programming Assignments. You are required to submit your assignments by the indicated deadlines and in addition, to peer-assess three of your classmates' assignments according to provided instructions. During this peer-assessment, you are expected to provide details in the feedback section of the assignment's Specimen Assessment Form, indicating why you awarded the grade that you did to your peer. Failure to submit assignments and/or peer-assessments may result in failure of the course.

Discussion Assignments & Response Posts/Ratings

Some units in this course require that you complete a Discussion Assignment. You are required to develop and post a substantive response to the Discussion Assignment in the Discussion Forum. A substantive response is one that fully answers the question that has been posed by the instructor. In addition, you must extend the discussion by responding to at least three (3) of your peers' postings in the Discussion Forum and by rating their posts. Instructions for proper posting and rating are provided inside the Discussion Forum for each week. Discussion Forums are only active for each current and relevant learning week, so it is not possible to contribute to the forum once the learning week has come to an end. Failure to participate in the Discussion Assignment by posting in the Discussion Forum and responding to peers as required may result in failure of the course.

Learning Journals

Your instructor may choose to assign specific topics and/or relevant questions as a weekly Learning Journal entry for you to complete, but you are still encouraged to also use it to document your activities, record questions/problems you may have encountered, reflect on the learning process, and draft answers for other course assignments. The Learning Journal must be updated on a weekly basis, because its entries will be assessed by your instructor directly as a part of your final grade. The Learning Journal will only be seen by your instructor.

Quizzes

This course will contain three types of quizzes – the Self-Quiz, the Graded Quiz, and the Review Quiz. These quizzes may contain multiple choice, true/false, or short answer questions. The results of the Self-Quiz will not count towards your final grade. However, it is highly recommended that you complete the Self-Quiz to ensure that you have adequately understood the course materials. Along with the Reading Assignments, the results of the Self-Quiz should be used as part of an iterative learning process, to thoroughly cover and test your understanding of course material. You should use the results of your Self-Quiz as a guide to go back and review relevant sections of the

Reading Assignments. Likewise, the Review Quiz will not count towards your final grade, but should also be used to assist you in a comprehensive review and full understanding of all course material, in preparation for your Final Exam. Lastly, the results of the Graded Quiz will count towards your final grade.

Final Exam

The Final Exam will take place during the Thursday and Sunday of Week/Unit 9, following the completion of eight units of work. The format of the Final Exam is similar to that of the quizzes, and may contain a combination of different question types. You will have one attempt to take the exam, and it will be graded electronically. Specific instructions on how to prepare for and take the Final Exam will be provided during Week 8 (located inside the Unit 9 Learning Guide). Final Exams must be taken without the use of course learning materials (both those inside and outside the course). If particular materials are allowed for use during the exam, these will be noted in the exam's instructions.

Course Forum

The Course Forum is the place to raise issues and questions relating to the course. It is regularly monitored by the instructors, and is a good place to meet fellow students taking the same course. While it is not required to participate in the Course Forum, it is highly recommended.

Course Policies:

Grading Components and Weights

Each graded component of the course will contribute some percentage to the final grading scale, as indicated here:

Discussion Assignments	20%
Programming Assignments	25%
Learning Journals	10%
Two Graded Quizzes	20% (10% each)
Final Exam	25%
TOTAL	**100%**

Grading Scale

This course will follow the standard 100-point grading scale defined by the University of the People, as indicated here:

Letter Grade	Grade Scale	Grade Points
A+	98-100	4.00
A	93-97	4.00
A-	90-92	3.67
B+	88-89	3.33
B	83-87	3.00
B-	80-82	2.67
C+	78-79	2.33
C	73-77	2.00
C-	70-72	1.67
D+	68-69	1.33
D	63-67	1.00
D-	60-62	0.67
F	Under 60	0.00

Grade Appeal

If you believe that the final grade you received for a course is erroneous, unjust, or unfair, please contact your course instructor. This must be done within seven days of the posted final grade. For more information on this topic, please review the Grade Appeal Procedure in the University Catalog.

Participation

Non-participation is characterized by lack of any assignment submissions, inadequate contributions to the Discussion Forums, and/or lack of peer feedback to Discussion/Written Assignments. Also, please note the following important points about course participation:

- Assignments must be submitted on or before the specified deadline. A course timeline is provided in the course schedule, and the instructor will specify deadlines for each assignment.
- Any student showing non-participation for two weeks (consecutive or non-consecutive) is likely to automatically fail the course.

- Occasionally there may be a legitimate reason for submitting an assignment late. Most of the time, late assignments will not be accepted and there will be no make-up assignments.
- All students are obligated to inform their instructor in advance of any known absences which may result in their non-participation.

Academic Honesty and Integrity

When you submit any work that requires research and writing, it is essential to cite and reference all source material. Failure to properly acknowledge your sources is known as "plagiarism" – which is effectively passing off an individual's words or ideas as your own. University of the People adheres to a strict policy of academic honesty and integrity. Failure to comply with these guidelines may result in sanctions by the University, including dismissal from the University or course failure. For more information on this topic, please review the Academic Integrity Policy in the University Catalog.

Unless otherwise stated, any materials cited in this course should be referenced using the style guidelines established by the American Psychological Association (APA). The APA format is widely used in colleges and universities across the world and is one of several style and citation formats required for publication in professional and academic journals. Purdue University's Online Writing LAB (OWL) is a free website that provides excellent information and resources for understanding and using the APA format and style. The OWL website can be accessed here: https://owl.purdue.edu/owl/purdue_owl.html

Code of Conduct

University of the People expects that students conduct themselves in a respectful, collaborative, and honest manner at all times. Harassment, threatening behavior, or deliberate embarrassment of others will not be permitted. Any conduct that interferes with the quality of the educational experience is not allowed and may result in disciplinary action, such as course failure, probation, suspension, or dismissal. For more information on this topic, please review the Code of Conduct Policy in the University Catalog.

Submitting Assignments

Please note that accepted formats for assignments are Microsoft compatible format, PDF, or any other file format that is clearly specified in the course and activity instructions. These files should not be password-protected. Additionally, unless otherwise stated in assignment instructions, screenshots of computer coding, mathematical formulas or images with sentence structures (typed or in handwriting) are not allowed when you submit your assignments in this course.

Last modified: Thursday, 29 September 2022, 7:05 PM