Graduate Course Syllabus

IT 632: Software Design and Modeling

Center: Online

Course Prerequisites

IT 511

Course Description

This course covers software development life cycle models (waterfall, spiral, agile, etc.) with an emphasis on the design phase. Given software system requirements, students will create and document a software design using industry standard modeling techniques with emphasis on UML (class, sequence, state). Subtopics include software design patterns and software architecture (MVC).

Course Outcomes

- Develop models of software systems that describe the dynamic behaviors and illustrate the structures of the software designs
- Document system requirements and designs using Unified Modeling Language and appropriate tools
- Analyze software system business cases to determine system requirements for software designs
- Analyze the process of using UML diagrams in the software development life cycle to develop accurate software programs
- Develop clear, comprehensive software design documents that incorporate necessary diagrams, models, notations, and next steps

Required Materials

Using your learning resources is critical to your success in this course. Please purchase directly through the SNHU Online Bookstore rather than any other vendor. Purchasing directly from the bookstore ensures that you will obtain the correct materials and that the IT Service Desk, your advisor, and the instructor can provide you with support if you have problems.

Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development
Craig Larman
Prentice Hall
Third Edition
2005
ISBN 13: 978-0-13-148906-6

Pluralsight: 12 Month Subscription
Pluralsight
ISBN: 978-0-692-50853-4

Microsoft Azure Dev Tools for Teaching
Southern New Hampshire University students in STEM courses (and some business courses) may obtain discounted, often free, Microsoft software through the Microsoft Azure Dev Tools for Teaching program. Review these Microsoft Azure guidelines for information on accessing your software. If you have trouble downloading and installing the software, contact your instructor.

This course uses the following Microsoft Azure software:

- Microsoft Visio

Diversity, Equity, and Inclusion
As indicated in our core values, SNHU is committed to "embrace diversity where we encourage and respect diverse identities, ideas, and perspectives by honoring difference, amplifying belonging, engaging civilly, and breaking down barriers to bring our mission to life."

This may or will be reflected in SNHU's curriculum as we embrace and practice diversity, equity, and inclusion (DEI) to provide the most transformative experience for our students, faculty, and staff. Because topics pertaining to DEI can be sensitive, please remember that embodying and practicing diversity, equity, and inclusion is one of our core values that you will encounter throughout the academic experience. In higher education, we are expected to think and engage critically. Use a growth mindset to embrace the diverse readings, course assignments, and experiences of your peers and faculty.

For more information about DEI at SNHU, please visit our website at the Office of Diversity and Inclusion.

Instructor Availability and Response Time
Your class interaction with the instructor and your classmates will take place on a regular, ongoing basis. Your instructor will be actively engaged within the course throughout the week. You will normally communicate with your instructor in the weekly discussions or the General Questions discussion topic so that your questions and the instructor's answers benefit the entire class. You should feel free, however, to communicate with your instructor via SNHU email at any time, particularly when you want to discuss something of a personal or sensitive nature. Your instructor will generally provide a response within 24 hours. Instructors will post grades and feedback (as applicable) within seven days of an assignment's due date, or within seven days of a late submission.

Grade Distribution

Assignment Category	Number of Graded Items	Point Value per Item	Total Points
Discussions	10	40	400
Use Case Analysis	1	50	50
Final Project			
Milestones	4	50	200
Final Submission	1	350	350
			Total Course Points: 1,000

This course may also contain practice activities. The purpose of these non-graded activities is to assist you in mastering the learning outcomes in the graded activity items listed above.

University Grading System: Graduate

Grade	Numerical Equivalent	Points
A	93–100	4.00
A-	90–92	3.67
B+	87–89	3.33
B	83–86	3.00
B-	80–82	2.67
C+	77–79	2.33
C	73–76	2.00
F	0–72	0.00
I	Incomplete	
IF	Incomplete/Failure *	
W	Withdrawn	

* Please refer to the policy page for information on the incomplete grade process.

Grading Guides

Specific activity directions, grading guides, posting requirements, and additional deadlines can be found in the Assignment Guidelines and Rubrics section of the course.

Weekly Assignment Schedule

All reading and assignment information can be found within each module of the course. Assignments and discussion posts during the first week of each term are due by 11:59 p.m. Eastern Time. Assignments and discussion posts for the remainder of the term are due by 11:59 p.m. of the student's local time zone.

In addition to the textbook readings that are listed, there may be additional required resources within each module.

Module	Topics and Assignments
1	Introduction to Object-Oriented Analysis and Design Principles *Applying UML and Patterns*, Chapters 1, 2, and 3 1-1 Discussion: Software Analysis and Design 1-2 Final Project Review
2	Understanding Inception and Developing Requirements *Applying UML and Patterns*, Chapters 4 and 5 2-1 Discussion: Identifying Evolutionary Requirements 2-2 Final Project Milestone One: Draft of Software System Overview
3	Understanding Use Cases *Applying UML and Patterns*, Chapters 6 and 7 3-1 Discussion: Use Case Diagram 3-2 Activity: Use Case Analysis
4	Basics of Iteration and System Sequence Diagrams *Applying UML and Patterns*, Chapters 8, 9, and 10 4-1 Discussion: System Sequence Diagram Scenario 4-2 Final Project Milestone Two: Software Analysis and Use Cases
5	Object Analysis in Software Development *Applying UML and Patterns*, Chapters 11–14 5-1 Discussion: Analyzing Object Designs in Software Development
6	Creating UML Class Diagrams *Applying UML and Patterns*, Chapters 15 and 16 6-1 Discussion: Understanding Sequence and Communication Diagrams 6-2 Final Project Milestone Three: UML Sequence Diagrams
7	Software Design With Responsibilities *Applying UML and Patterns*, Chapter 17 7-1 Discussion: Applying GRASP 7-2 Final Project Milestone Four: UML Class Diagrams
8	Designing Objects Using GRASP *Applying UML and Patterns*, Chapter 18 8-1 Discussion: Understanding Realization in Use Cases
9	Techniques for the Implementation Phase *Applying UML and Patterns*, Chapters 19 and 20 9-1 Discussion: Mapping Designs to Code 9-2 Final Project Submission: Software Design Document
10	Test-Driven Development *Applying UML and Patterns*, Chapter 21 10-1 Discussion: Test-Driven Development Principles

Attendance Policy

Online students are required to submit a graded assignment/discussion during the first week of class. If a student does not submit a graded assignment/discussion during the first week of class, the student is automatically dropped from the course for non-participation. Review the full attendance policy.

Late Assignments Policy

Meeting assigned due dates is critical for demonstrating progress and ensuring appropriate time for instructor feedback on assignments. Students are expected to submit their assignments on or before the due date. Review the full late assignment policy.

SNHU Student Handbook

Review the student handbook.

ADA/504 Compliance Statement

Southern New Hampshire University (SNHU) is dedicated to providing equal access to individuals with disabilities in accordance with Section 504 of the Rehabilitation Act of 1973 and with Title III of the Americans with Disabilities Act (ADA) of 1990, as amended by the Americans with Disabilities Act Amendments Act (ADAAA) of 2008.

SNHU prohibits unlawful discrimination on the basis of disability and takes action to prevent such discrimination by providing reasonable accommodations to eligible individuals with disabilities. The university has adopted this policy to provide for prompt and equitable resolution of complaints regarding any action prohibited by Section 504, the ADA, or the ADAAA.

For questions about **support services, documentation guidelines, general disability issues, or pregnancy accommodations**, please visit the Online Accessibility Center (OAC).

As a student, you must complete an interactive intake process, with supporting documentation, in order to be granted accommodations. Once reasonable accommodations are approved by the OAC, you will receive an accommodations letter. You are then responsible for sharing the letter with your instructor. Accommodations are not retroactive.

If you feel you've been subject to discrimination on the basis of disability, by any party, you may file a complaint or grievance. For more information on the ADA/504 Grievance Policy, go to the Disability and Accessibility Services website.

Academic Honesty Policy

Southern New Hampshire University requires all students to adhere to high standards of integrity in their academic work. Activities such as plagiarism and cheating are not condoned by the university. Review the full academic honesty policy.

Copyright Policy

Southern New Hampshire University abides by the provisions of United States Copyright Act (Title 17 of the United States Code). Any person who infringes the copyright law is liable. Review the full copyright policy.

SNHU Withdrawal Policy

Review the full withdrawal policy.

Southern New Hampshire University Policies

More information about SNHU policies can be found on the policy page.