SOFTWARE ENGINEERING SEMINAR Course Description

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2025-III





Outline

- 1 You don't know who I am
- 2 Course Overview
- Syllabus
- 4 Grading & Rules
- Bibliography





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- 3 years as software engineer for several tech companies in Colombia.
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Overview

This course is designed to introduce undergraduate students to the fundamental concepts of **software engineering**, including *requirements engineering*, **agile methodologies**, and **collaborative development practices**.

The main focus of the course is on software testing engineering. Student will learn about testing principles, test design techniques, and automation tools to ensure software quality. The course covers unit testing, integration testing, system testing, and test-driven development (TDD) within agile frameworks.

Classes will include lectures, practical exercises, and **team project**. By the end of the course, students will be able to **define requirements**, apply agile practices, and implement effective **testing strategies** in real-world software projects.





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Course Goals

The main goal of this course is to provide students with a solid understanding of software engineering fundamentals, with a strong emphasis on software testing.

By the end of the course, you should be able to

- Elicit and document requirements for software projects
- Apply agile methodologies and collaborative practices in development teams.
- Understand and implement testing principles and test design techniques.
- Develop and execute unit, integration, and system tests.
- Use automation tools and apply test-driven development (TDD)
- Evaluate and improve software quality through effective testing strategies.





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Prerequisites

This is a basic course, so you must have some knowledge of:

- Programming in Java, Python, or C++.
- Foundations of Object-Oriented Programming.
- Basic concepts of UML and Class Diagrams.
- Basic usage of Git and GitHub.
- Basic concepts of data systems and the relational model.
- Use of *IDEs* such as **VS** Code, Eclipse, or PyCharm.





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Syllabus I

Topic	Time
Software Engineering Introduction	3 sessions
Agile Methodologies	2 sessions
Project Management /	2 sessions
Requirements Engineering /	3 sessions
System Analysis & Design 🖊	2 sessions
Software Architectures Fundamentals	2 sessions
Testing Engineering Fundamentals	2 sessions
Catch Up — Course Project	2 sessions

Table: Course Schedule — Period I





Syllabus II

Period	Торіс	Time
Period II	Unit Testing	_4 sessions
	Integration Testing	2 sessions
	Acceptance Testing	3 sessions
	System Performance Testing	2 sessions
	Final Test	1 session
Period III	Project Dissertation —	2 sessions

Table: Course Schedule — Period II & III





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Grades Percentages

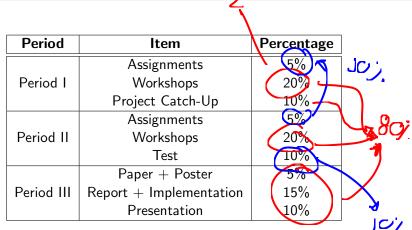


Table: Software Engineering Seminar — Grades Distribution





- All assignments must be submitted handwritten on time and in English. Grammar and spelling will not be evaluated.
- Copying and pasting from the internet are **forbidden**. Please **develop** your own ideas and solutions.
- Class attendance is not mandatory. If you miss classes, you must study independently.
- No cell phones, no smartwatches, no WhatsApp, no Tinder, no smart-anything. Just you and your brain. Pay attention in class
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- Always be respectful to your classmates and to me. You must be kind to everyone inside (and outside) the classroom.
- There is no best programming language, tool, or technology. There are only **better** or **worse** solutions.
- You must be honest with your work. If you don't know something just ask me. I will be glad to help you.
- You must be responsible with your work. If you don't submit on time, please don't complain.
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Bibliography

Recommended bibliography:

- **Software Engineering**, by Ian Sommerville.
- ➤ Software Engineering at Google, by Titus Winters, Tom Manshreck, and Hyrum Wright.
- The Pragmatic Programmer, by Andrew Hunt and David Thomas.
- ★ Clean Code: A Handbook of Agile Software Craftsmanship, by Robert C. Martin.
- Refactoring: Improving the Design of Existing Code, by Martin Fowler.
- **Test-Driven Development: By Example**, by Kent Beck.
- **Agile Estimating and Planning**, by Mike Cohn.
- ➤ Continuous Delivery: Reliable Software Releases through Build,
 Test, and Deployment, by Jez Humble and David Farley.



Bibliography

Recommended bibliography:

- Agile Testing: A Practical Guide for Testers and Agile Teams, by Lisa Crispin and Janet Gregory.
- Specification by Example: How Successful Teams Deliver the Right Software, by Gojko Adzic.
- Domain-Driven Design: Tackling Complexity in the Heart of Software, by Eric Evans.
- Patterns of Enterprise Application Architecture, by Martin Fowler.
- Design Patterns: Elements of Reusable Object-Oriented Software, by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides.





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Thanks!

Questions?





