Software Modeling Foundations
Course Description

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Lecturer
Computer Engineer
School of Engineering
Universidad Distrital Francisco José de Caldas

2024-III

Outline

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Academic Experience

- **Computer Engineer**, M.Sc. in Computer Engineering, and *researcher* for 15 years.

- 7 years as **full-time associate professor** at colleges, for Computer Engineering programs.

- 3 years as **lecturer professor** for both colleges and goverment STEM programs.

- **Speaker** in Colombia, Brasil, Bolivia, at IEEE events and colleges.

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Overview

This course is designed to introduce undergraduate students to foundations of **design patterns** and *good practices* of **software modeling**. This is **not** a course fully focus on **software architecture**, but it is part of main concepts of software achitecture.

Classes will consist of lectures, **discussions**, practical examples, and workshops. Also, you must take some readings from *software architecture*. In addition, there will be a **semester-long project**, as well one course exam, four **workshops**, and ten additional **assignmens**.

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Goals

The main goal of this course is to provide undergraduate students with different **models** and **tools** for solving software problems using **object-oriented paradigm**.

At the end of this course you should be able to **create** a full-software **backend solution** with a good level of **quality**. Also, you should be able to **design** robust software systems in an **agnostic** way.

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Prerequisites

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

- **Programming** in Java, Python, or C++.
- Object-Oriented Programming foundations.
- UML and **Class Diagrams** basic concepts.
- **Git** basic usage, and **GitHub** basic usage.
- **Data systems** and relational model basic concepts.
- Use of **IDEs** like VS Code, Eclipse, or PyCharm.

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1. You don't know who I am

2. Course Overview

3. Syllabus

4. Grading & Rules

5. Bibliography

Syllabus I

Period	Topic	Time
Period I	Software Modeling Introduction	4 classes
	Workshop Object-Oriented Design	1 session
	Creational Patterns	4 classes
	Structural Patterns	5 classes
	Workshop on Patterns I	1 session
	Course Project Catch-Up	1 session

Table: Schedule for Period I

Syllabus II

Period	Topic	Time
Period II	Structural Patterns	2 classes
	Behavioral Patterns	6 classes
	Workshop on Patterns II	1 session
	Solid Principles	1 classes
	Anti-Patterns and Code Smell	4 classes
	Workshop on Code Smells	1 session
	Final Test	1 session
Period III	Projects Presentation	2 session

Table: Schedule for Period II & III

Outline

Grades Percentages

Period	Item	Percentage
Period I	Assignments	5%
	Workshops	20%
	Project Catch-Up	10%
Period II	Assignments	5%
	Workshops	20%
	Test	10%
Period III	Paper + Poster	5%
	Project Implementation	10%
	Course Project	15%

Table: Software Modeling Grades Distribution

Don't hate the player, hate the game

- All asignments must be submitted hand-written on **time** and in **english**. Grammar and spelling will **not** be evaluated.

- Copying and pasting from internet is **forbidden**. Please, **develop** your own solutions.

- Class attendance is **not mandatory**. If you **miss** classes, you must *study by yourself*.

- No cell-phones, no smartwatches, no whatsapp, no tinder, no smartanything. **Just you and your brain**. Pay attention at clase.

- Communications with me must be done by **email** or by **slack**. I will **not** answer any question by *WhatsApp*.

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Code of Conduct

- Always be **respectful** to your classmates and to me. You must be **kind** with everyone inside (*and outside*) the classroom.

- There is no a better 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 cry.

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Recommended bibliography:

- **Design Patterns: Elements of Reusable Object-Oriented Software**, by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides.

- **Clean Code: A Handbook of Agile Software Craftsmanship**, by Robert C. Martin.

- **Refactoring: Improving the Design of Existing Code**, by Martin Fowler.

- **Domain-Driven Design: Tackling Complexity in the Heart of Software**, by Eric Evans.

- **Patterns of Enterprise Application Architecture**, by Martin Fowler.

Bibliography

Recommened bibliography:

- **Construcción de Software Orientado a Objetos**, by Bertrand Meyer.
- **Thinking Java**, by Bruce Eckel.
- **Java2 How To Program**, by Deitel & Deitel.

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Thanks!

Questions?

www.linkedin.com/in/casierrav