

# SYSTEMS ANALYSIS & DESIGN

## Course Description

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Computer Engineering Program  
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Universidad Distrital Francisco José de Caldas

2025-III



UNIVERSIDAD DISTRITAL  
FRANCISCO JOSÉ DE CALDAS

# Outline

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



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# Academic Experience

- **Computer Engineer**, **M.Sc.** in Computer Engineering, and *researcher* for **16 years**.
- 8 years as **full-time associate professor** at colleges, in Computer Engineering programs.
- 3 years as **lecturer professor** for both colleges and **government STEM** programs.
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# Non-academic Experience



- ~~PyCon Colombia and Python Bogotá co-organizer.~~
- ~~3 years as software engineer~~ for several tech companies in Colombia.
- 3 years as **Technical Leader** of Machine Learning and Data Science at a USA startup.
- 1.5 years as **MLOps Engineer** for a Fintech company in LATAM.
- Currently, **Technical Leader** of Data Engineering and Machine Learning at Blend 360.





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# Overview

This course is designed to introduce undergraduate students to foundations of **systems analysis and design** and a lot of multiple computer science **paradigms**. This is a course focused on **thinking** and **problem solving**.

Classes will consist of lectures, discussions, and practical examples. Also, you must take some readings from *theory of systems*. In addition, there will be a semester-long project, as well as one final course test, four workshops, and six additional assignments.



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# Goals

The main goal of this course is to provide undergraduate students with different **models concepts**, and **tools** for **understanding** and **solving problems** using **analysis systems and design** based on projects requirements.

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





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#299/eI



# Prerequisites

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

- **Programming** in Python or Java.
- Draw diagrams to represent anything. → Draw.io
- Use of **IDEs** like VS Code, Eclipse, or PyCharm.

Also, it is recommended to have some knowledge in:

• Data Structures and Algorithms

• Git basic usage, and GitHub basic

→ 90% - 95% of  
↳ extensions



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→ graphs / trees

statistical

contributions



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# Syllabus I

Period	Topic	Time
Period I	Systems Thinking	2 sessions
	Systems Engineering	3 sessions
	Systems Analysis	4 sessions
	Systems Design	4 sessions
	Robust System Design	3 sessions
	Projects Catch-Up	2 sessions

Theory

Table: Schedule for Period I



# Syllabus II

Period	Topic	Time
Period II	General Systems Theory Paradigms	3 sessions
	Systems Projects Management	3 sessions
	Systems Simulation	5 sessions
	Final Test	1 session
Period III	Project Dissertations	2 sessions

Table: Schedule for Period II & III



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# Grades Percentages

Period	Item	Percentage
Period I	Assignments	5%
	Workshops	20%
	Project CatchUp	10%
Period II	Assignments	5%
	Workshops	15%
	Final Test	15%
Period III	Paper + Poster	5%
	Report + Implementation	15%
	Presentation	10%

Handwritten notes and arrows indicating a total percentage calculation:

- 10% (circled in blue, pointing to the 10% for Project CatchUp)
- 75% (circled in orange, with an arrow pointing to the 15% for Final Test)
- 30% (circled in orange, with an arrow pointing to the 15% for Report + Implementation)

Table: Systems Analysis & Design — Grades Distribution





# Don't hate the player, hate the game

- 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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# Code of Conduct

- 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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6:00 → 5:59.35

6:10 - en



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# Bibliography

Recommended bibliography:

- **Systems Analysis and Design**, by [Alan Dennis](#), [Barbara Haley Wixom](#), and [Roberta M. Roth](#).
- **Systems Analysis and Design**, by [Kenneth E. Kendall](#) and [Julie E. Kendall](#).
- **Systems Analysis and Design**, by [Scott Tilley](#) and [Harry J. Rosenblatt](#).
- **Systems Analysis and Design**, by [Gary B. Shelly](#), [Harry J. Rosenblatt](#), and [Thomas J. Cashman](#).



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# Thanks!

## Questions?



URL: [www.linkedin.com/in/casierrav](https://www.linkedin.com/in/casierrav)

