Systems Analysis & Design

Course Description

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Full-time Adjunct Professor
Computer Engineering Program
School of Engineering
Universidad Distrital Francisco José de Caldas

2026-I

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Outline

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- **Computer Engineer**, M.Sc. in Computer Engineering, and *researcher* for 16 years.
- 9 years as **full-time associate professor** at colleges, in Computer Engineering programs.
- 3 years as **lecturer professor** for both colleges and government STEM programs.
- Speaker at IEEE events and colleges in Colombia, Brazil, and Bolivia.

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Non-academic Experience

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- 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 startupt.
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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** and four **workshops**.

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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 **systems analysis and design** based on project 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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Prerequisites

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

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

Draw.io

Visily.ai

Also, it is recommended to have some knowledge of:

- **Data Structures** and **Algorithms**.
- **Git** basic usage, and **GitHub** basic usage.

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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
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

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Grades Percentages

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

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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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`

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