

COURSE DESCRIPTION

Systems Sciences Foundations

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

2025-I



Outline

- 1 You Don't Know Who I Am
- 2 Course Overview
- 3 Grading & Rules
- 4 Bibliography



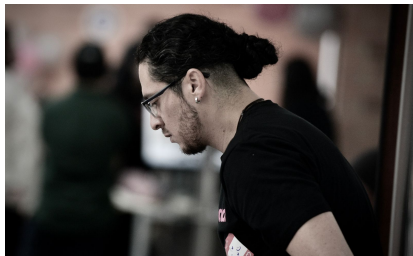
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Academic Experience

- **Computer Engineer, MSc.** in Computer Engineering, and *researcher* for the past **15 years**.
- 8 years as a **full-time associate professor** at various colleges for **Computer Engineering programs**.
- 3 years as a **lecturer** at colleges and in **government STEM programs**.
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Non-academic Experience



- **Co-organizer** of **PyCon Colombia** and **Python Bogotá**; collaborated with *ScipyLATAM* and *Jupyter LATAM*.
- +3 years working as a **Software Engineer** for several **tech** companies in Colombia.
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Overview

This course is designed to **introduce undergraduate students** to **foundations** of **systems sciences** as an integration of **artificial intelligence** and **cybernetics**. Also, it will provide students with **tools** and **models** for solve **complex problems** in **systems**.

Classes will consist of **lectures**, **discussions**, and **practical examples**. Also, you will be required to complete some readings in *computer sciences*. In addition, there will be a **semester-long project**, as well **one final test**, **three workshops**, and **ten additional assignments**.



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Goals

The **main goal** of this course is to **provide** undergraduate students with **different concepts** and **tools** for solving **real-life problems** using **artificial intelligence & cybernetics**.

At the end of this course you should be able to **create** a full system-design of an **engineering solution** using **artificial intelligence/cybernetics**.



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Prerequisites

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

- **Programming** in [Java](#), [Python](#), or [C++](#).
- **Object-Oriented Programming** [fundamentals](#).
- Basic concepts of **Systems Analysis and Design**.
- Basic usage of **Git** and **GitHub**.
- Using **IDEs** such as [VS Code](#), Eclipse, or PyCharm.



Syllabus

Period	Topic	Time
Period I	Systems Sciences Introduction	6 sessions
	Workshop on Systems Design	1 session
	Systems Sciences Fundamentals I	7 sessions
	Workshop on Dynamical Systems	1 session
	Course Project Catch-Up	1 session
Period II	Systems Sciences Fundamentals II	6 sessions
	Workshop on Machine Learning	1 session
	Systems Sciences Applications	7 sessions
	Workshop on Cybernetics	1 session
	Final Test	1 session
Period III	Projects Dissertation	2 sessions

Table: Schedule for Period I



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Grades Percentages

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

Table: Systems Sciences Foundations Grades Distribution



Don't hate the player, hate the game

- All assignments 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.
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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.
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Bibliography

Recommended bibliography:

- [Systems Science](#) by Peter Checkland.
- [Systems Thinking, Systems Practice](#) by Peter Checkland.
- [Introduction to Systems Thinking](#) by Daniel Aronson.
- [Thinking in Systems](#) by Donella Meadows.
- [Cybernetics](#) by Norbert Wiener.
- [An Introduction to Cybernetics](#) by W. Ross Ashby.
- [Cybernetics and Systems](#) by R. Trappl.
- [Cybernetics and Systems Theory in Management](#) by Fredmund Malik.
- [Cybernetics and Management](#) by Stafford Beer.
- [Cybernetics and the Philosophy of Mind](#) by Kenneth Sayre.



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Thanks!

Questions?



URL: www.linkedin.com/in/casierrav

