Course Description
Computer Science III

Author: Eng. Carlos Andrés Sierra, M.Sc.

cavirguezs@udistrital.edu.co

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

2025-I

Outline

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Academic Experience

- **Computer Engineer**, **MSc.** in Computer Engineering, and *researcher* for the last 15 years.

- 8 years as **full-time 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 **compilers design**. It is hard to generate a new programming language without a good **compiler**.

Classes will consist of lectures, **discussions**, and practical examples. Also, you must take some readings from theory of the computation. In addition, there will be a **semester-long project**, as well one **final test**, and three **workshops**.

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Goals

The main goal of this course is to cover the main concepts associated with **compilers design**. Also, you will learn how to create a **simple** compiler for a **simple** programming language.

At the end of this course you should be able to **create** a simple **compiler** for a simple programming language, where the output is a graphical representation of the program rather than machine code.

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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.
- **Data structures** and algorithms basic concepts.

Also, it is desirable to have some knowledge in:

- Git basic usage, and GitHub basic usage.
- Use of IDEs like VS Code, Eclipse, or PyCharm.

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Syllabus I

Period	Topic	Time
	Introduction to Programming Languages	3 sessions
	Workshop on Theory of the Computation	1 session
Period I	Compilers	1 session
	Lexical Analyzers	1 sessions
	Workshop on Lexical Analyzers	1 session
	Course Project Catch-Up	1 session

Table: Schedule for Period I

Syllabus II

Period	Topic	Time
Period II	Synthatic Analyzer & Parsing	1 session
	Semmantic Analyzer	2 sessions
	Workshop on Compilation Analyzers	1 session
	Translation Process & Correctness	2 sessions
	Advanced Topics	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	Workshops	60%
	Project Catch-Up	40%
Period II	Workshop	50%
	Test	50%
Period III	Paper + Poster	5%
	Project Implementation	10%
	Project Report	15%

Table: Software Modeling Grades Distribution

Don't hate the player, hate the game

- **All asignments** must be submitted 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.

- You must be **responsible** with your work. If you don't submit **on time**, please don't cry.

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Bibliography

Recommened bibliography:

- Compilers: Principles, Techniques, and Tools, by Aho, Lam, Sethi, and Ullman.

- Engineering a Compiler, by Cooper and Torczon.

- Modern Compiler Implementation in Java, by Andrew W. Appel.

- Programming Language Pragmatics, by Michael L. Scott.

- The Art of Compiler Design: Theory and Practice, by Thomas Pittman.

- The Dragon Book, by Aho, Lam, Sethi, and Ullman.

- The Theory of Parsing, Translation, and Compiling, by Alfred V. Aho.

- Notas de Clase, Teoría de la Computación, by Rodrigo de Castro Korgi.

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Thanks!

Questions?

URL: `www.linkedin.com/in/casierrav`