

CS 399 Introduction to Computer Programming
IES Abroad Barcelona

DESCRIPTION:

This course introduces the core concepts of computer programming: what a computer program consists of and how one can build a simple program. Students will learn the basics of programming consisting of variables, conditions and loops. They also learn how to design and apply this knowledge to create programs to perform tasks such as automation and data processing. The focus of the course is on understanding how programs are structured and how logics are implemented.

CREDITS: 3

CONTACT HOURS: 45 hours

LANGUAGE OF INSTRUCTION: English

INSTRUCTOR: Touraj Vaziri

PREREQUISITES: Mathematics (Basic Calculus). A laptop to bring to each session.

ADDITIONAL COST: None

METHOD OF PRESENTATION:

- Theory - Each new topic will be presented by the instructor, who will highlight its relevance and practical implications
- Guided in-class activity - Going through one example together
- In-class exercises - Students working on a set of exercises, teacher available to guide and help
- Homework - Similar exercises at home to master the topic
- Project - An end-to-end coding project to cover all the topics

REQUIRED WORK AND FORM OF ASSESSMENT:

- Course participation - 10%
- Midterm Exam - 25%
- Final Exam - 25%
- Final Project - 40%

Course Participation

Evaluated based on the participation in class activities.

Midterm Exam

Midterm exam in the format of a series of programming questions where students write code.

Final Exam

Final exam in the format of a series of programming questions where students write code.

Final Project

Final project in which students work in groups to design and build a program for a purpose.

LEARNING OUTCOMES:

By the end of the course students will be able to:

- Design simple programs to solve real problems
- Explain programming building blocks such as variables, loops, and conditions
- Create programs to automate tasks

- Debug errors in code and fix them
- Write logic to create custom programs

ATTENDANCE POLICY:

As a member of our class community, you are expected to be present and on time every day. Attending class has an impact on your learning and academic success. For this reason, attendance is required for all IES Abroad Barcelona classes, including course-related excursions. If a student misses more than three classes in any course without justification, three percentage points will be deducted from the final grade for every additional absence. Seven unjustified absences in any course will result in a failing grade. Absences will only be justified, and assessed work, including exams, tests and presentations rescheduled, in cases of documented medical or family emergencies.

CONTENT:

Week	Content	Assignments and Readings
Week 1	Session 1: Introduction to Computer Programming	Introduction
	Session 2: History and the Age of AI	Introduction
Week 2	Session 3: Variables and Data Types (Overview). Working with Variables in Practice	Chapter 1
	Session 4: Hands-on Programming (Guided Session)	Guide prepared by the instructor and provided in advance.
Week 3	Session 5: Strings and Integer. Floats and Booleans	Chapter 1
	Session 6: Hands-on Programming (Guided Session)	Guide prepared by the instructor and provided in advance.

Week 4	Session 7: Introduction to Conditions (if/else). Logical Expressions and Comparisons	Chapter 2
	Session 8: Hands-on Programming (Guided Session)	Guide prepared by the instructor and provided in advance.
Week 5	Session 9: Nested Conditions. Common Logic Patterns	Chapter 2
	Session 10: Hands-on Programming (Guided Session)	Guide prepared by the instructor and provided in advance.
Week 6	Session 11: Introduction to Loops (for/while). Loop Use Cases and Practice	Chapter 3
	Session 12: Hands-on Programming (Guided Session). Final project follow up.	Guide prepared by the instructor and provided in advance.
Week 7	Session 13: Midterm planning.	
	Session 14: Midterm	
Week 8	Session 15: Combining Loops and Conditions. Loop Control (break, continue)	Chapter 3
	Session 16: Hands-on Programming (Guided Session). Final project follow up.	Guide prepared by the instructor and provided in advance.
Week 9	Session 17: Arrays (Lists): Creating and Using Lists. Looping Through Lists	Chapter 6

	Session 18: Hands-on Programming (Guided Session). Final project follow up.	Guide prepared by the instructor and provided in advance.
Week 10	Session 19: Dictionaries: Keys and Values. Dictionary Operations	Chapter 7
	Session 20: Hands-on Programming (Guided Session). Final project follow up.	Guide prepared by the instructor and provided in advance.
Week 11	Session 21: Functions. Return Values and Parameters	Chapter 4
	Session 22:	Guide prepared by the instructor and provided in advance.
Week 12	Session 23: Using Libraries	Appendix a
	Session 24: Final project presentations	

COURSE-RELATED TRIPS:

- N/A

REQUIRED READINGS:

- Automate the Boring Stuff with Python (<https://automatetheboringstuff.com/>)
- Chapter 1 - Python Basics
- Chapter 2 - if-else and Flow Control
- Chapter 3 - Loops
- Chapter 4 - Functions
- Chapter 5 - Debugging
- Chapter 6 - Lists
- Chapter 7 - Dictionaries and Structuring Data
- Chapter 8 - Strings and Text Editing

RECOMMENDED READINGS:

- [Python Full Course for Beginners \[2025\]](#)
- [Programming with Mosh - YouTube](#)
- V. Anton Spraul. Think Like a Programmer: An Introduction to Creative Problem Solving



INSTRUCTOR BIOGRAPHY: Touraj Vaziri has a Bachelor in Software Engineering and a Masters in Engineering Leadership, he has worked in different Tech companies, big firms such as IBM, Microsoft and Oracle as well as medium sized companies and startups. He is passionate about teaching and sharing his knowledge in the field of technology. He is currently working full-time as an instructor in Barcelona teaching courses: Python, Building digital products, Creating automations, Databases, Data analytics, Data visualisations and Big Data.