# Group Project Seminar on Programing and Analysis

Syllabus

Alexandre Neto

January 16, 2026

## Group Project Seminar on Programing and Analysis

### Instructor

My name is **Alexandre** Neto and this is my email: aneto@novaims.unl.pt

I hold a MSc in Science and Geographic Information Systems by Universidade Nova de Lisboa, and I have 20+ years of experience in Geographic Information Systems. Currently, I work as freelancer Geospatial Consultant, mainly working on Spatial Analysis, Spatial Database Design and Management, QGIS Plugins Development and Training.

### Course description

This course main goal is to provide a base introduction to programming and relational databases. The students will be introduced to best-practices and fundamental concepts, which are the bases of programming, and data organisation and manipulation. Because this is a short course, tackling mainly the fundamentals of scripting and databases, it is left for the students to explore the technology that better fit their needs and interests.

### Objectives and goals

At the end of this curricular unit, the students should be able to write medium size scripts in Python in a logical and organized way. The students should understand the base concepts of relational databases and should be able to put that knowledge into practice by designing, creating, and managing a simple relational database. Students should be able to query and manipulate geospatial data in a relational database. Students will be able to create data pipelines from data extraction to data loading. Students should understand the usage of an API and should be able to create one to provide data to other analysts.

### Course schedule

In the first two weeks, sessions will be based on “follow along” kind of classes, where the student learns the basis of Python scripting and relational databases, and get exposed to some working examples. The remaining week will be dedicated to work on the Project Assessment. The groups should work together outside the classes. The classes will be used to check the groups project progress and answer to specific questions.

The GPS sessions are presented in the next table:

Table 1: GPS class schedule

| Session | Date | Topic | Schedule | Room |
|---|---|---|---|---|
| 01 | 21/01/2026 | Introduction and installs | 15:00 - 17:00 | Room 9 |
| 02 | 22/01/2026 | Introduction to Python I | 14:00 - 16:00 | Room 9 |
| 03 | 23/01/2026 | Introduction to Python II | 14:00 - 16:00 | Room 9 |
| 04 | 26/01/2026 | Introduction to Pandas | 14:00 - 16:00 | Room 9 |
| 05 | 27/01/2026 | Introduction to Relational Databases | 14:00 - 16:00 | Room 9 |
| 06 | 28/01/2026 | Introduction to SQL | 14:00 - 16:00 | Room 9 |
| 07 | 29/02/2026 | Introduction to PostGIS | 14:00 - 16:00 | Room 9 |
| 08 | 30/02/2026 | Working example | 14:00 - 16:00 | Room 9 |
| 09 | 02/02/2026 | Working example | 14:00 - 16:00 | Room 9 |
| 10 | 03/02/2026 | **Group Idea Presentation** + Working example | 14:00 - 16:00 | Room 9 |
| 11 | 06/02/2026 | Project assessment | 14:00 - 16:00 | Room 9 |
| 12 | 09/02/2026 | Project assessment | 14:00 - 16:00 | Room 9 |
| 13 | 11/02/2026 | Project assessment | 14:00 - 16:00 | Room 9 |
| 14 | 13/02/2026 | Project assessment | 14:00 - 16:00 | Room 9 |
| 15 | 19/02/2026 | Project assessment | 14:00 - 16:00 | Room 9 |
| 16 | 20/02/2026 | Project assessment | 14:00 - 16:00 | Room 9 |
| 17 | 23/02/2026 | Project assessment | 14:00 - 16:00 | Room 9 |
| 18 | 25/02/2026 | Final Group Project presentation | 10:00 - 13:00 | Room 9 |

## Evaluation

In group, the students will have to develop a project and make a presentation. However, other factors will be taken into account. Details about grades will be clarified in session 1.

## Requisites

Will to learn.

## Required texts

No required texts. All relevant information can be found in the internet, and will be indicated by the instructor.