

# Course : Python, programming QGIS extensions

*Practical course - 3d - 21h00 - Ref. QGS*

*Price : 1940 CHF E.T.*

QGIS is a free GIS (Geographic Information System) software that lets you write new functions using the Python language. This course teaches you how to write a new QGIS function in Python (integrating a graphical interface in Qt).

## Teaching objectives

At the end of the training, the participant will be able to:

- ✓ Learn the basics of PyQt
- ✓ Discover the QGIS API
- ✓ Be able to build a QGIS extension

## Intended audience

Developers supporting a geomatics department.

## Prerequisites

Knowledge of geomatics and Python.

## Practical details

### Hands-on work

Training alternating theory and practice.

## Course schedule

### 1 Structure of a QGIS extension

- Basic extension files.
- The initialization file.
- The main class file.
- Ancillary functions file.
- The graphical interface.
- The interaction file.
- Event management.
- Create actions associated with events.

### Hands-on work

Writing an extension.

### PARTICIPANTS

Developers supporting a geomatics department.

### PREREQUISITES

Knowledge of geomatics and Python.

### TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

### ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more. Participants also complete a placement test before and after the course to measure the skills they've developed.

### TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

## 2 Distribution of a plugin, creation of a repository

- QGIS extension repository system.
- The extension installer.
- Add an extension to QGIS.
- Mandatory files (metadata).
- Depositing and sharing extensions.

### Hands-on work

Submission of an extension.

## 3 PyQt

- Qt widgets.
- Basic HMI components (QMainWindow, QFrame, QLabel...).
- Widget customization.
- Event management.
- Notions of signal and slot.
- Link between Qt and Python.
- Integration of widgets in python code.
- Signal and slot management.

### Hands-on work

Write a Python program with a PyQt interface.

## 4 Writing an extension with a Qt interface

- Create extensions with a PyQt interface.
- Distribute the extension.

## Dates and locations

### REMOTE CLASS

2026 : 24 June

### TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

### ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.