

PENS-230

Digital ENAC: le codage en contexte

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Cursus	Sem.	Type
Projeter ensemble ENAC	BA4	Opt.

Language of teaching	English
Credits	4
Withdrawal	Unauthorized
Session	Summer
Semester	Spring
Exam	During the semester
Workload	120h
Weeks	
Hours	48 weekly
Lecture	4 weekly
Exercises	22 weekly
Project	22 weekly
Number of positions	
It is not allowed to withdraw from this subject after the registration deadline.	

Summary

Digital ENAC aims to provide students with the ability to apply the principles of coding to the practical life of designers and engineers. We will not focus on a specific coding language, but will extrapolate the principles and the logic behind algorithms to apply them to collaborative applications.

Content

During the Digital ENAC week we will provide the students with the tools and the vision to put coding into the perspective of future professionals in the design world.

After introductory lectures, and a series of guest lectures, the students will be divided into multidisciplinary groups and asked to choose a collaborative project to carry out during the week.

Tools and language that will be discussed and used:

- Python
- Rhino Grasshopper
- GPT for code generation
- SAP2000 (and by extension CSI America suite)
- and many more

Examples of projects could be related to:

- Space utilization, interior and urban, with the support of GIS technology
- Networks, that can be artificial (roads, buildings) or natural (rivers)
- Parametric design of a structure and corresponding life cycle assessment
- Object design, evaluation and fabrication using digital tools

Each project will involve cross disciplinary application of high level coding.

Keywords

Coding
Digital Tools
Form Generation
Analysis
Visualisation

Learning Prerequisites

Required courses

None. Everyone is welcome!

Recommended courses

None. Everyone is welcome!

Important concepts to start the course

None. Everyone is welcome!

Learning Outcomes

By the end of the course, the student must be able to:

- Explain a code's structure
- Identify errors in a code
- Describe the goal of a piece of code
- Compare different algorithms and their purposes
- Analyze the quality of a piece of code
- Critique the role of coding in design and engineering
- Create a simple code from scratch
- Choose the best coding approach for a given problem

Transversal skills

- Make an oral presentation.
- Access and evaluate appropriate sources of information.

Teaching methods

Lectures, guest lectures, tutorials and project support

Expected student activities

- participations in discussions in lectures and beyond
- project development in interdisciplinary groups
- project presentations
- research of existing methods and short presentations

Assessment methods

Students will be evaluated based on the project presentation at the end of the course.

Supervision

Office hours	No
Forum	Yes

Resources**Moodle Link**

- <https://go.epfl.ch/PENS-230>