

Project lectures

ENG-270

Objectives for turning in code (generally)

- Other people can verify your results as quickly as possible
- Build off your project (reuse part of your code for another project)
- Meeting either objective requires similar level of effort in communicating your implementation clearly

Topics to be covered

Workflow

- automation 1: including C/MATLAB/Python integration
- automation 2: shell scripting and string processing
- data and code organization (project directory structure, modules)
- revision control and collaboration through git
- documenting code, citing prior art
- AI tools

Structuring computation

- data models
- programming paradigms

Numerical methods

- constraint satisfaction (solving system of equations)
- parameter estimation (optimization, data fitting)
- numerical integration (initial value and boundary value problems)

Objective for lectures

- Very rapid overview of a broad range of relevant topics
- Provide exposure to possibilities for further exploration
- Point to resources for independent learning
- Learn good practices and discrimination of “code quality”

Schedule

Week	Date (Wed)	Date (Fri)	Language	Exercise	Concepts	Assessment	
1	2024-09-11	2024-09-13	Python	eolienne, oiseaux, suisse	File I/O, functions, control (loops), Fourier analysis, plotting, arrays		
2	2024-09-18	2024-09-20	Python				
3	2024-09-25	2024-09-27	MATLAB	eolienne, oiseaux, suisse	File I/O, functions, control (loops), Fourier analysis, plotting, arrays		
4	2024-10-02	2024-10-04	MATLAB		data models and programming paradigms		
5	2024-10-09	2024-10-11	C	des, parite, etoiles, lac	Random numbers, loops, functions		
6	2024-10-16	2024-10-18	C	cryptographie, seismes, GPS	Pointers, characters/strings, arrays, struct		
	2024-10-23	2024-10-25	Fall break				
7	2024-10-30	2024-11-01	C	terrain, pollution	2D arrays, "simulation"	project proposal 2024-10-30 17h	
8	2024-11-06	2024-11-08	C				
9	2024-11-13	2024-11-15		Independent project		midterm 2024-11-13 13h-16h	
10	2024-11-20	2024-11-22		Independent project	Automation, Numerical methods		
11	2024-11-27	2024-11-29		Independent project	Version control, Documenting code		
12	2024-12-04	2024-12-06		Independent project	Citations, Visualizations		
13	2024-12-11	2024-12-13		Independent project			
14	2024-12-18	2024-12-20		Independent project		project report 2024-12-20 17h	

Period	Description
Wednesdays 13h15-14h	GCC330 Lecture
Wednesdays 14h-15h	GRB001/GRC002 independent work
Wednesdays 15h-16h	GRB001/GRC002 with assistants
Fridays 10h15-11h	GCC331 Lecture
Fridays 11h-13h	GRB001/GRC002 with assistants

I will answer Ed Discussion on Mondays if not sooner