Numerical Optimization Syllabus

Fall 2022 – LB Lab in the Leonardo da Vinci building, ground floor. 11:00-13:00.

Instructor Information

Instructor	Email	Office Location & Hours
Dr. Emanuele Panizon	epanizon@gmail.com	Ex-SISSA building, 211
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General Information

Description

Programming is an indispensable tool of the modern scientist. Theoretical and empirical minded scientists across disciplines write programs to perform calculations, clean data, and generate figures. In this course, you will learn how to carry out these tasks using the programming language Python. Python is a high-level, general-purpose programming language that emphasizes readability, making it a useful language to have familiarity with as a scientist. Proficiency with Python and these key packages will help you in your other courses at ICTP and beyond.

Expectations and Goals

By the end of this course, you should have familiarity with basic Python, be able to install Python packages, and be able to use the packages Numpy, Scipy, and Matplotlib. In October you will complete a small group assignment (details forthcoming). You will primarily be using Jupyter notebooks on Google Collab, where you can drag and drop your Jupyter notebooks and run it through the website without having to download software.

Course Materials

Required Materials

All required materials will be provided by the instructors before the course. Materials will be shared through Slack on the workspace **ICTP_QLS_NumMethods_2022**. You should have received an email invitation via Slack.

Optional Materials

Elements of this course follow the book "*Introduction to Scientific Programming with Python*" by Joakim Sundnes. A PDF of this book will be provided on Slack, though reading it is not required.

Course Schedule

Date	Topic	Notebook	
On your own	**Basic Python**	**0_Intro_to_Python.ipynb**	
19/9	**Intermediate Python**		
21/9	**Libraries and reproducibility**		

Date	Topic	Notebook	
23/9	Numpy		
26/9	Scipy		
28/9	Matplotlib		