MATH 1MP, Introduction to mathematical/scientific programming

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This is an *approximate* and *preliminary* schedule for the course. It is guaranteed to change.

week 1: basics

Notes (HTML, PDF)

- M Jan 5 introduction to the course; introduction to Python; editors and workflows
- W Jan 7 data types; logical operations; string operations; regular expressions
- F Jan 9 lists; indexing and slicing

week 2: flow control

- M Jan 12 conditionals, loops
- W Jan 14 flow control; while
- F Jan 16 flow charts

week 3: debugging etc.

- M Jan 19 debugging
- W Jan 21 testing
- F Jan 23 benchmarking/profiling/optimization: Euclidean algorithm

week 4: functions and modules

- M Jan 26 functions and scoping
- W Jan 28 . . . continued
- F Jan 32 importing modules

week 5: tuples and dictionaries (and arrays?)

- M Feb 2 tuples, lists and dictionaries
- W Feb 4 . . . continued
- F Feb 6

week 6: classes (and plotting)

- M Feb 9 plotting (data visualization)
- W Feb 11 classes . . .
- F Feb 13 **MIDTERM exam** (in class)

midterm recess: Feb 16-21

week 7: random numbers, numeric representations

- M Feb 23 pseudo-random numbers and applications
- W Feb 25 . . . continued
- F Feb 27 numeric representations

week 8: floating point and exception handling

- M Mar 2 floating point algorithms (root-finding, optimization)
- W Mar 4 floating point algorithms (differential equations)
- F Mar 6 exception handling

week 9: data management

- M Mar 9 data management; pandas
- W Mar 11 web scraping
- F Mar 13 databases

week 10: symbolic computation

- M Mar 16 symbolic computation; SymPy and Sage
- W Mar 18 . . . continued
- F Mar 20 . . . continued

week 11 . . . projects . . .

- M Mar 23 start projects . . .
- W Mar 25
- F Mar 27

week 12 . . . projects . . .

- M Mar 30
- W Apr 1

3 April: Good Friday

week 13 . . . projects . . .

- M Apr 6
- W Apr 8

8 April: classes end