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.

See http://bbolker.github.io/math1mp/ for lecture notes, assignments, etc..

week 1: basics

- T Jan 5 introduction to the course; introduction to Python; editors and workflows
- R Jan 7 data types; logical operations; string operations; regular expressions
- F Jan 8 lists; indexing and slicing

week 2: flow control

- T Jan 12 conditionals, loops
- R Jan 14 flow control; while
- F Jan 15 flow charts

week 3: debugging etc.

- T Jan 19 debugging
- R Jan 21 testing
- F Jan 22 benchmarking/profiling/optimization: Euclidean algorithm

week 4: functions and modules

- T Jan 26 functions and scoping
- R Jan 28 importing modules, Roman numeral examples
- F Jan 29 more Roman numeral examples

week 5: more function examples/reviews

- T Feb 2 function examples
- R Feb 4 . . . continued
- F Feb 5 . . . continued

week 6: tuples and dictionaries (and arrays?) (and plotting)

- T Feb 9 tuples and dictionaries
- R Feb 11 . . . more . . .
- F Feb 12 **MIDTERM exam** (in class)

midterm recess: Feb 15-20

week 7: dictionaries continued; numpy

- T Feb 23
- R Feb 25
- F Feb 26

week 8: floating point

- T Mar 1 integration
- R Mar 3 pseudo-random numbers and applications
- F Mar 4 numeric representations

week 9: numeric computation cont.

- T Mar 8 floating point algorithms (root-finding, optimization)
- R Mar 10 floating point algorithms (differential equations)
- F Mar 11

week 10: symbolic computation

- T Mar 15 plotting (data visualization)
- R Mar 17
- F Mar 18

week 11 misc sci comp

- T Mar 22 data management; pandas
- R Mar 24 web scraping
- F Mar 25 **Good Friday**

week 12 symbolic computation

- T Mar 29 symbolic computation; SymPy and Sage
- R Mar 31 . . . continued
- F Apr 1

week 13 last week

- T Apr 5
- R Apr 7
- F Apr 8

8 April: classes end