Jupyter in CPSC 103

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CPSC 103: reaching non-majors

High demand for computing courses by non-majors

Computation is highly relevant to diverse disciplines, both within and outside STEM

Yet different disciplines use computation differently

We want to support a diversity of students who want to develop computing skills

CPSC 103: Introduction to Systematic Program Design

Audience

- designed for non-majors; intended to be widely accessible
- 2018/2019W enrolment: 650 students over 4 sections

Course details

- 3-credits; no pre-requisites
- taught using Python and Jupyter Notebooks
- 1.5 lecture hours + 1 tutorial hour per week

Pedagogical approach

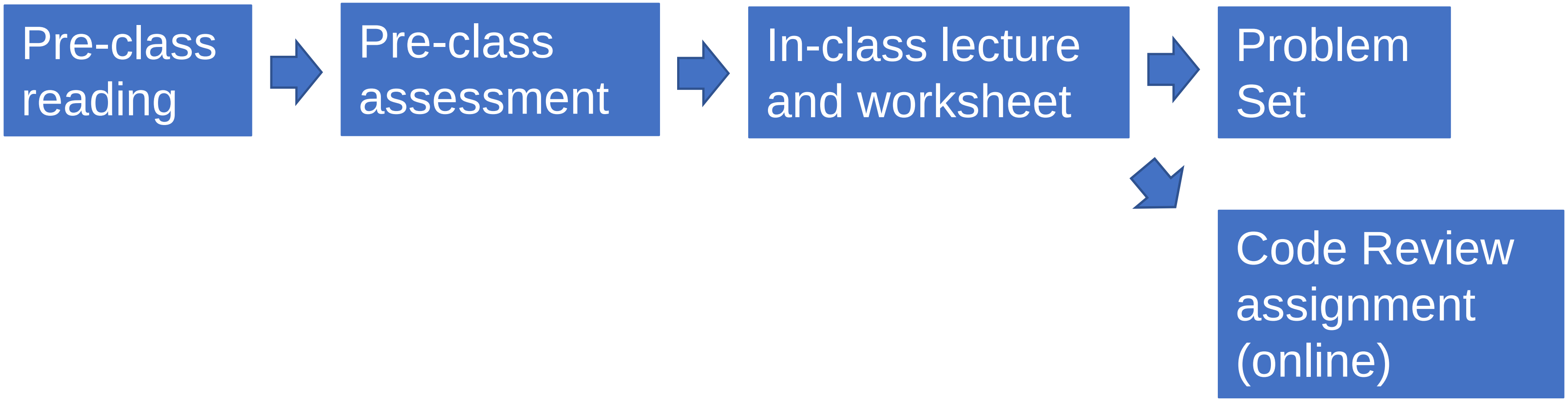
- online course modules + just-in-time teaching + flipped classroom
- blended with reduced face time

Course work and assessments

- pre-class assessments online
- weekly problem sets
- flexible data-analysis project

A typical module

Required



Pre-class reading

Pre-class assessment

In-class lecture and worksheet

Problem Set

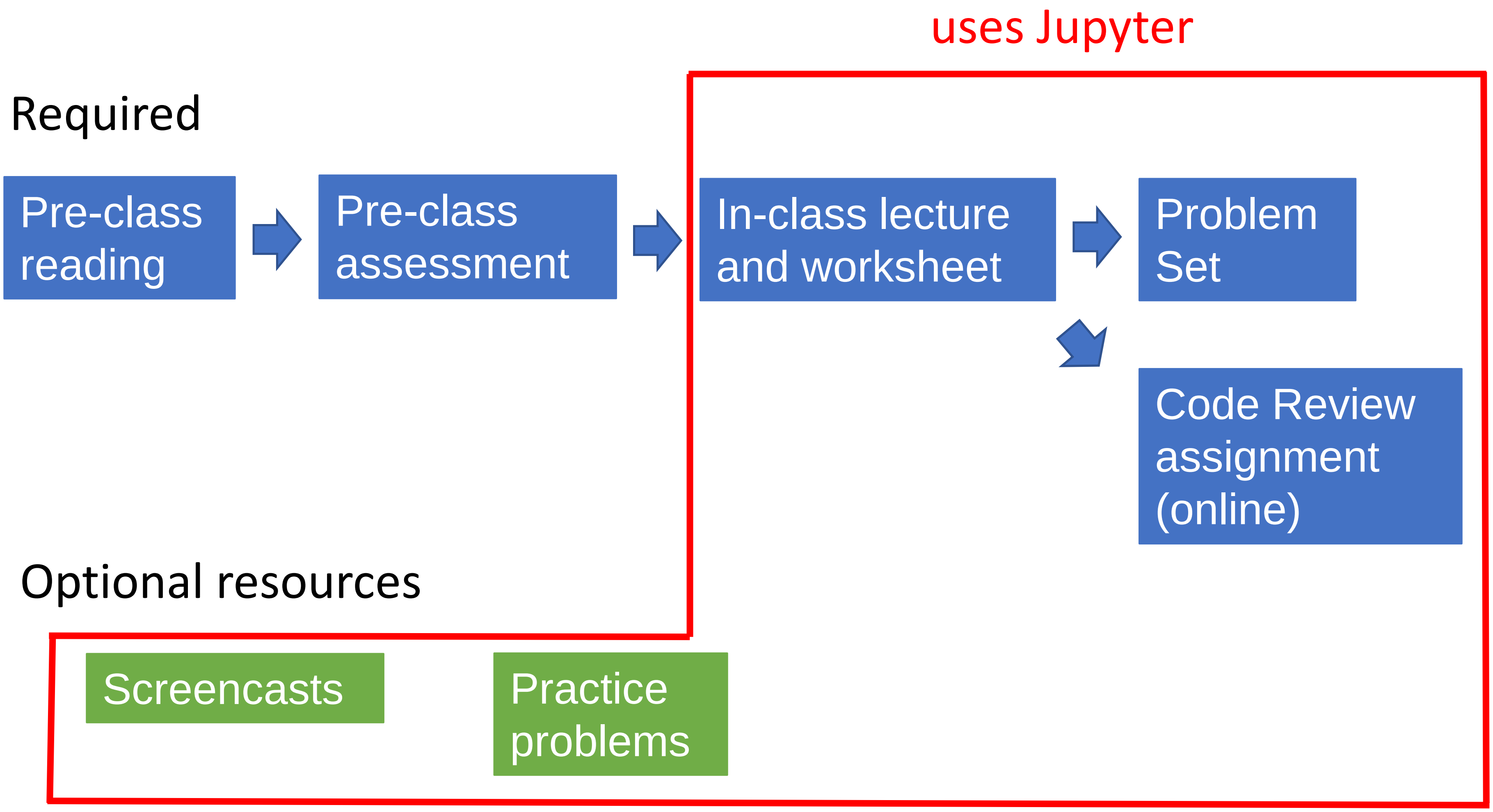
Code Review assignment (online)

Optional resources

Screencasts

Practice problems

A typical module



uses Jupyter

Required

Pre-class reading

Pre-class assessment

In-class lecture and worksheet

Problem Set

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Optional resources

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Practice problems

CPSC 103 project

Students choose a data set **related to their interests** and using a Jupyter notebook, design and implement a program to answer a question about the data. They also present to peers via a Jupyter notebook.

For example, Zander Chila analyzed data that he collected as a member of a research group. He was able to generate new research questions based on his analysis.

Jupyter mechanics in CPSC 103

- students have CWL access to do all of their programming via syzygy.ubc.ca
- we can push files to their account, they can download files from canvas and upload to Jupyter, and they can create their own files
- we have created a custom course library with that the students can import and use on syzygy.ubc.ca
- students’ final project presentations are done with a Jupyter notebook that combines code, text, and images

Pros/Cons on using Jupyter

Pros

- easy access for students wherever they have internet access
- low barriers to setup; students can get started quickly
- it’s fairly intuitive with a good user experience

Cons

- no built-in visual debugger
- state that is maintained in a kernel after cells are run and then changed is confusing to students
- (occasionally but very rarely) syzygy is down and students are unable to access their work

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