

IHI-ISG Python Workshop Syllabus

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Basic Course Information

- What: three workshops on Python programming
- When: Jan. 12, Jan. 13, Jan. 14, 2022, from 2:30 pm to 4:00 pm
- Where: IHI conference room
- Who:
 - Instructor: Changye Li (lix3013@umn.edu)
- Communication: Emails

Course Description and Learning Outcomes

Python is one of the most popular object-oriented programming (OOP) languages for many disciplines that requires computing. The goal of this workshop is to help students understand how computing can be applied to problem-solving in their own expertise, and introduce fundamental concepts of computer science, including algorithms, objects, data structures, by learning the basic and advanced syntax of Python.

After this workshop, students should be able to

- think and write code as computer scientists
- solve real world problems with programming concepts, including data expressions, conditionals and loops, data types and structures
- understand OOP paradigm and concepts, and apply concepts, including class and object, to discipline-specific problems
- program in a professional way, including writing code professionally, integrated development environment (IDE), GIT, debuggers

Prerequisite

IHI graduate students, and Non-CS graduate students who are willing to learn programming.

Course Format and Content

This workshop will be offered in a combination of lecture, discussion and lab. In other words, students are expected to complete several quizzes or short programming assignments when they attend this workshop.

The course materials can be found on: <https://github.com/changyeli/isg-programming-club>

Topics covered

- Course overview
- Python installation and environment setup
- Basic Python syntax and quizzes
- Python data structure, control structures and functions
- Quick starter on regular expression
- Basic OOP design
- File handling
- Error handling and debugging
- Basic version control and pair programming for collaboration

Hardware Requirements

Windows, Mac or Linux laptop with internet connection

Recommended Books (Optional)

- Programming in Python 3 by Mark Summerfield
- Python Cookbook by David Beazley