COP 4045/ Python Programming

Credits: 3 credits


Reference materials:
2. The Python documentation page: https://docs.python.org/3/
3. The Python tutorial: https://docs.python.org/3/tutorial/index.html
5. Graphical User Interfaces with Tk: https://docs.python.org/3/library/tk.html

Specific course information

Catalog description:
This class is an introduction to the Python programming language, with applications to practical problem solving involving data manipulation and analysis. The first part of the class focuses on teaching the basics of the Python language. Topics covered are data structures (lists, arrays, dictionaries, sets, comprehensions), functions, files, and object-oriented language elements. In the second part of the course students learn to apply advanced language features and methodologies in combination with third-party libraries for scientific computation to develop real-world applications.

Prerequisites: COP 3530 Data Structures and Algorithm Analysis

Specific goals for the course:
An ability to apply engineering/computer science theory and hardware/software development fundamentals to develop and conduct appropriate experimentation, analyze and interpret data, and use computing/engineering judgment produce engineering/computing-based solutions/conclusions

Brief list of topics to be covered:
- Ch 1. Beginnings
- Ch 2. Control
- Ch 3. Algorithms
- Ch 4. Working with Strings
- Ch 5. Functions
- Ch 6. Files and Exceptions
- Ch 7. Lists and Tuples
- Ch 8. More on Functions
- Ch 9. Dictionaries and Sets
- Ch 11. Intro to Classes
- Ch 12. More on Classes
- Ch 13. Program Development with Classes
- Ch 14. Files and Exceptions II
- Ch 15. Recursion
- Ch 16. Fun stuff with Python
- Scientific Programming – NumPy