**Course Description:**

This course is an introductory course to Python language. The course will focus on the planning and implementation of programs, using the grammar of the Python programming language. In this course, students will gain a basic understanding of programming in Python by creating a variety of scripts. Students will learn about language syntax, semantics, and the runtime environment, as well as common data types, data structures, control flow, files, databases and object-oriented concepts.

**Course Outcomes:**

1. Summarize the python methodology
2. Exemplify the python coding standards
3. Produce a program using python basic data structures
4. Generate content to standard output and files
5. Produce scripts that receive input from console, files, database and other APIs/libraries
6. ~~Differentiate various data structures to make an optimal selection for a program~~
7. Demonstrate the process of structuring the data using lists, dictionaries, sets and tuples.
8. ~~Recall the purpose of creating a function~~
9. Explain, organize and execute the creation functions for reusability
10. ~~Recall the purpose of creating a class~~
11. ~~Organize and execute the creation classes for reusability~~
12. Implement the Object-oriented Programming concepts in Python.
13. Implement built-in libraries to manipulate operating systems of various platforms

**Assessments:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Assessment** | **Description** | **Outcomes assessed:** | **EES** | **Week** | **Weight** |
| Lecture Quiz | The best **6** out of **8** quizzes will count. | 1,2,6,7,9 | 1,2,3,4,5 | TBA | 9 |
| Lab Test 3 x 4 | Hands-On test | 2,3,4,5,8,10,11 | 1,2,3,4,5,6,7,10 | TBA | 18 |
| Lab exercises 8 x 1 | Grade calculated based on atKlass statistics for each student | 2,3,4,5,8,10,11 | 1,2,3,4,5 | TBA | 8 |
| Mid-term test | Mixed format test | 1,2,3,6,7,8,11 | 1,2,4 | 7 | 20 |
| Final test | Mixed format test | 1,2,3,6,7,8,9,10 | 2,4,5 | 15 | 30 |
| Assignment 1 | Individual assignment | 2,3,4,5,8,10,11 | 1,2,3,4,5,6,7,10,11 | 14 | 15 |

**Books and Resource:**

1. Murach’s Python Programming By Michael Urban and Joel Murach   
   ISBN: 978-1-890774-97-4

**Outline:**

|  |  |  |  |
| --- | --- | --- | --- |
| **WEEK** | **Topic** | **Content** | **Chapter/**  **Reference** |
| 1 |  | * **Introduction to Python** * Zen of Python * PEP * How to use IDLE to develop programs * How to use PyCharm to develop programs * **Coding 101 in Python** * Basic coding skills * Test and debug a program * How to use five of the Python functions * Package and namespace | 1,2,5 |
| 2 |  | * **Coding Basics** * How to work with data types and variables * How to work with numeric data * **How to work with lists and tuples** * Basic skills for working with lists * How to work with a list of lists * How to work with tuples | 5,6 |
| 3 |  | * **How to code control statements** * How to code Boolean expressions * How to code the selection structure * How to use the iteration structure * **How to define and use functions and modules** * How to define and use functions * How to create and use modules | 3,4 |
| 4 |  | * **How to work with string** * Accessing Strings * Basic Operations * String slices * Function and Methods * **How to work with dictionaries** * Introduction * Accessing values in dictionaries * Working with dictionaries * Dictionary properties & functions | 2,10,12 |
| 5 |  | * **Exceptions** * How to handle a single exception * How to handle multiple exceptions * Standard error * **How to work with file I/O** * Folder manipulation * An introduction to file I/O * How to use text files * How to use CSV files * How to use binary files | 7,8 |
| 6 |  | * **System Applications** * The sys module * The os module * The platform module * The subprocess module * Forking and piping * The socket module |  |
| 7 |  | ***MID-TERM EXAM*** |  |
| 8 |  | **Intersession Week** |  |
| 9 |  | * **How to use Python to work with a database** * How to connect to a SQLite database * How to execute SELECT statements * How to get the rows in a result set * How to execute INSERT, UPDATE, and DELETE statements * How to test the database code * How to handle database exceptions | 19 |
| 10 |  | * **How to define and use your own classes** * An introduction to classes and objects * How to define a class * How to work with object composition * How to work with encapsulation | 14 |
| 11 |  | * **How to work with inheritance** * How to define a sub-class * Polymorphism * How to work with object composition * How to work with encapsulation   **How to override object methods**   * Special methods * Inheritance & special methods | 8,15 |
| 12 |  |  |  |
| 13 |  |  |  |
| 14 |  |  |  |
| 15 |  | ***FINAL EXAM*** |  |
| Please note: this schedule may change as resources and circumstances require. For information on withdrawing from this course without academic penalty, please refer to the College Academic Calendar: <http://www.georgebrown.ca/Admin/Registr/PSCal.aspx> | | | |