PYTHON PROGRAMMING

1.Thông tin về học phần (General Information)

Tên học phần (Course name):   Python Programming

Mã học phần (Course code):   INT_E14119

Số tín chỉ (Number of credits):   3

Loại học phần (Course type):   Compulsory

Học phần tiên quyết (Prerequisites):

Học phần trước (Previous courses):

Học phần song hành (Parallel courses):

Các yêu cầu đối với học phần (Course requirements):

- Lecture room: Projector, microphone and speaker, black board or white board
- Laboratory: Computers

Giờ tín chỉ đối với các hoạt động (Teaching and Learning hours):

- Lý thuyết (Lectures):   32h
- Bài tập (Exercises):   8h
- Bài tập lớn (Projects):   4h
- Thực hành (Labs):   0h
- Tự học (Individual reading): 1h

Địa chỉ Khoa/Bộ môn phụ trách học phần (Address of the Faculty/Department in charge of the course):

- Address: Faculty of Information Technology 1 - Posts and Telecommunications Institute of Technology, Km10, Nguyen Trai Street, Ha Dong District, Hanoi.
- Phone number: (024) 33510432

2. Mục tiêu học phần (Objectives)

Về kiến thức (Knowledge):

The aim of this course is to teach learners fundamental skills in the python programming language, including:
- Data types
- Control flows
- Functions and classes
- Practical projects

Kỹ năng (Skills):

The aim of this course is to equip learners with skills in:
- developing better programming skills.
- designing a python program to solve a problem in computer science.
- thinking and building applications that work in python.

Thái độ, Chuyên cần (Attitude):

Students are required to attend the classes and complete exercises and assignments.

3. Tóm tắt nội dung học phần (Description)

Python is a very powerful programming language used for many different applications. This course provides students with a fundamental understanding of programming in python by creating a variety of applications for the Web and for system development. In particular, we will cover topics that include data types, control flow, object-oriented programming, as well as graphical user interface-driven applications. Students will have a chance to apply these basic concepts into several practical projects, i.e. games, data visualization, and web applications.

4. Nội dung chi tiết học phần (Outlines)

Chapter 1: Introduction
1.1. Python history
1.2. Getting started
      1.2.1. Installing python
      1.2.2. Installing text editor
1.3. 'Helloworld.py' program

Chapter 2: Variable and simple data types
2.1. Variables
2.2. Strings
2.3. Numbers
2.4. Comments

Chapter 3: Lists
3.1. Definition
3.2. Changing, adding, and removing elements
3.3. Organizing a list
3.4. Avoiding index error
3.5. Looping through an entire list
3.6. Making numerical lists
3.7. Working with part of a list
3.8. Tuples

Chapter 4: If Statement
4.1. A simple example
4.2. Conditional tests
4.3. If statement
4.4. If statement with lists

Chapter 5: Dictionaries
5.1. A simple dictionary
5.2. Working with dictionaries
5.3. Looping through a dictionary
5.4. Nesting

Chapter 6: User input and while loop

6.1. How the input() function work
6.2. Introducing while loop
6.3. Using a while loop with lists and dictionaries

Chapter 7: Functions
7.1. Defining a function
7.2. Passing arguments
7.3. Return values
7.4. Passing a list
7.5. Passing an arbitrary number of arguments
7.6. Storing your function in a module

Chapter 8: Classes
8.1. Creating and using a class
8.2. Working with classes and instances
8.3. Inheritance
8.4. Importing classes
8.5. The python standard library

Chapter 9: File and exceptions
9.1. Reading from a file
9.2. Writing to a file
9.3. Exceptions
9.4. Storing data

Chapter 10: Projects
10.1. Alien invasion
      10.1.1. A ship that fires bullets
      10.1.2. Aliens
      10.1.3. Scoring
10.2. Data visualization
      10.2.1. Generating data
      10.2.3. Downloading data
      10.2.3. Working with APIs
10.3. Web applications
      10.3.1. Getting started with DJango
      10.3.2. User accounts
      10.3.3. Styling and deploying an app

5. Học liệu (Textbooks)
5.1. Học liệu bắt buộc (Required Textbooks)
[1]. Eric Matthes. *Python crash course: a hands-on, project-based introduction to programming*, No Starch Press, 2016.
5.2. Học liệu tham khảo (Optional Textbooks)
[2]. Allen B. Downey, *Think Python: How to Think Like a Computer Scientist,* O'Reilly, 2015
[3]. Zed A. Shaw, *Learn Python 3 the Hard Way,* Addison-Wesley, 2016

6. Phương pháp, hình thức kiểm tra – đánh giá kết quả học tập học phần (Grading Policy)

Grading method	Percentage	Group/Individual
- Attendance	10%	Individual
- Exercises	10%	Individual
- Mid-term projects/exam	20%	Group or individual
- Final examination	60%	Individual

Trưởng Bộ môn
(Head of Department)

Giảng viên biên soạn
(Lecturer)

Ngô Xuân Bách

Nguyễn Văn Thuỷ