Introduction to Python

Department: FISS   **Date:4/4/2022**

Course Code	ECON170031
Course Title	Introduction to Python
Credit	2
Credit Hours	36
Course Objectives	• Read a computational problem and formulate an algorithm to solve that problem. • Implement a program in Python that performs specific tasks. • Use abstractions such as variables and functions to manage complexity in your programs. • Describe the functionality of a program that you or someone else has written. • Find and fix errors in programs that you or someone else has written.
Course Description	This class focus on the fundamentals of Python programming and will cover variables, branching, loops, lists, 2D list, and dictionary. The applications of Python coding include image processing and csv file processing.

Course Requirements: （e.g. pre-requisites）
No prior programming experience is needed. High school level algebra is required.

Teaching Methods:
Lecture and lab

Instructor's Academic Background:
Paul Cao has taught Python related programming courses over the past 10 years and have extensive teaching experience at the undergraduate level.

Course Schedule (Please supply the details about each lesson)**:**

Day	Material
Day 1	Course intro, Logistics, Hello world, data types, Variables, expressions, Type conversions
	Lab 1
Day 2	Interpret errors, using functions, user input, Defining functions, boolean types and conditional statements / More conditional statements
	Lab 2
Day 3	Strings and Lists, How to get started with coding, Range, for loops

	Lab 3	
Day 4	While loops, break and continueReference, objects, methods, Object mutations, stack frame	
	Lab 4	
Day 5	Scope of variables, argument passing to functions, exercises	
	Lab 5	
Day 6	Memory model exercises, Debugging and testing	
	Lab 6	
Day 7	Nested for loops and 2D lists, tuples, Images and basic image transformations	
	Lab 7	
Day 8	Image transformation using functions, Modifying images in functions, steganography intro	
	Lab 8	
Day 9	bitwise operations and image encryption/decryption, Dictionaries	
	Lab 9	
Day 10	More about dictionaries, Data and csv file processing	
	Lab 10	
Day 11	Data visualization	
	Wrap up and final review	
Day 12	Final Exam	

The design of class discussion or exercise, practice, experience and so on:

The class will mostly based on lectures and in class labs. Students will be working on basic coding projects in Python.

Grading & Evaluation (Provide a final grade that reflects the formative evaluation process)**:**

Class participation: 10%

Labs (drop the lowest lab): 40%

Final Exam (open-book): 50%

Usage of Textbook： ☐Yes(complete textbook information form below)　　　　x No

Textbook Information (No more than two textbooks) **:**

Title	Author	ISBN	Publishing time	Publisher	Type Ⅰ	Type Ⅱ
					☐Self-compiled Textbook (Published) ☐Non-mainland Textbook ☐Other Textbook (Published)	☐National Planning Textbook ☐Provincial and Ministerial Planning Textbook ☐School Level Planning Textbook ☐Others

					□Self-compiled Textbook (Published) □Non-mainland Textbook □Other Textbook (Published)	□National Planning Textbook □Provincial and Ministerial Planning Textbook □School Level Planning Textbook □Others
Teaching References (Including author, title, publisher, publishing time,ISBN)**:**						

Table column size can be adjusted according to the content.