NGUYEN TAT THANH UNIVERSITY
NTT INSTITUTE OF INTERNATIONAL EDUCATION
GLOBAL LEARNING, GLOBAL SUCCESS

SCHEME OF WORK

Programme	**International Standard Program**	**Class**	**21BITV03**
Course Title	**Advanced Programming**	**Semester**	**2**
Lecturer	**Luong Tran Hy Hien**	**Year**	**2022 – 2023**
Contact	**hien.th.luong@nttu.edu.vn**		
Verifier	**Tran Son Hai**		

LEARNING OUTCOME (LO)	Assessment 1	Assessment 2	Assessment 3
1. Interpret the basic principles of programming Articulate the Object-Oriented Programming concepts.			
2. Identify the commonly used operations involving file systems and regular expressions.			
3. Implement database and GUI applications.			
4. Implement Machine Learning algorithms.			

Session / Date	Learning Outcome (LO)	Teaching Content & Session Activities	Readings and Other Resources
1	LO1	**Part 1: Introduction to Python** 1.1. Introduction to IDLE to develop programs 1.2. Basic coding skills 1.3. Working with data types and variables numeric data, working with string data, Python functions, Boolean expressions	Book 1 - Text book
2	LO1	**Part 1: Introduction to Python** 1.4. Selection structure, iteration structure 1.5. Working with lists, work with a list of lists	Book 2 - Text book

NGUYEN TAT THANH UNIVERSITY
NTT INSTITUTE OF INTERNATIONAL EDUCATION
GLOBAL LEARNING, GLOBAL SUCCESS

SCHEME OF WORK

Session / Date	Learning Outcome (LO)	Teaching Content & Session Activities	Readings and Other Resources
		1.6. Working with tuples 1.7. Working with dates and times 1.8. Get started with dictionaries	
3	LO1, LO2	**Part 2: Classes in Python** 2.1. OOP Concepts 2.2. Classes and objects, Classes in Python 2.3. Constructors 2.4. Data hiding, Creating Classes 2.5. Instance Methods, Special Methods, Class Variables	Chap 3 - Book 1 - Textbook
4	LO1, LO2	**Part 2: Classes in Python (cont.)** 2.6. Inheritance 2.7. Polymorphism 2.8. Type Identification 2.9. Custom Exception Classes 2.10. Iterators, generators and decorators	Chap 3, 4 Book 1 - Textbook
5	LO2, LO3	**Part 3: I/O and Error Handling in Python** 3.1. Introduction 3.2. Data Streams 3.3. Creating Your Own Data Streams 3.4. Access Modes 3.5. Writing Data to a File 3.6. Reading Data From a File 3.7. Additional File Methods	Chap 1- Book 3- Textbook
6	LO3	**Part 3: I/O and Error Handling in Python (cont.)** 3.8. Handling IO Exceptions 3.9. Errors,Runtime Errors 3.10. The Exception Model 3.11. Exception Hierarchy, Handling Multiple Exceptions 3.12. Working with Directories	Chap 7- Book 2- Textbook

NGUYEN TAT THANH UNIVERSITY
NTT INSTITUTE OF INTERNATIONAL EDUCATION
GLOBAL LEARNING, GLOBAL SUCCESS

SCHEME OF WORK

Session / Date	Learning Outcome (LO)	Teaching Content & Session Activities	Readings and Other Resources
7	LO3	**Part 4: An introduction to relational databases** 4.1. SQL statements for data manipulation 4.2. Using SQLite Manager to work with a database.	Book 5- Textbook
8	LO3	**Part 4: An introduction to relational databases (cont.)** 4.3. Using Python to work with a database 4.4. Creating a GUI that handles an event, working with components	Book 5- Textbook
9	LO3, LO4	**Part 5: Implement Machine Learning algorithms** 5.1. Usage of *Numpy* for numerical Data 5.2. Usage of *Pandas* for Data Analysis	Chap 3 - Book 5- Textbook
10	LO3, LO4	**Part 5: Implement Machine Learning algorithms (cont.)** 5.3. *Matplotlib* for Python plotting 5.4. *Seaborn* for Statistical plots	Chap 2 - Book 5- Textbook
11	LO3, LO4	**Part 5: Implement Machine Learning algorithms (cont.)** 5.5. Interactive Dynamic visualizations 5.6. *SciKit* for Machine learning	Chap 3 - Book 4- Textbook
12	LO1, LO2, LO3, LO4	**Final Part: Examination** **Group project – Q/A**	

Required Textbooks:

[1] John Shovic & Alan Simpson (2019). Python All-In-One for Dummies.

[2] Robert Johansson (2019). Numerical Python

Reference Materials:

[3] Peters Morgan (2018). Data Analysis From Scratch With Python. AI Sciences LLC.

[4] Wes McKinney (2018). Python Data Analytics Second Edition. O'Reilly Media.

[5] Jagadale, Umesh T., et al. "An experimental-based python programming for structural health monitoring of non-engineered RC frame." *Innovative Infrastructure Solutions* 5.1 (2020): 1-10..

NGUYEN TAT THANH UNIVERSITY
NTT INSTITUTE OF INTERNATIONAL EDUCATION
GLOBAL LEARNING, GLOBAL SUCCESS

SCHEME OF WORK

Assessment's components	Types of assessments	Weight distribution	Special requirements
Continuous assessment	Attendance, quizze(s), seminar(s), groupwork(s), discussions, etc.	**20%**	Including student's attendance and participation grades. For student's participation grade, you can use a combination of group discussion, quick Q&A, short quiz (15'), etc.
Mid-term assessment	Presentations(s). assignment(s), oral exam(s), et.	**30%**	Grade has to be above 0. Otherwise, students will be disqualified for the final assessment(s).
Final assessment	Presentation(s), project(s), oral exam(s), etc.	**50%**	Grade has to be 4 or better to have earlier assessments' grades counted toward the overall grade. Otherwise, grade for the final assessment is the grade for the course.