1. Course Code

2203

2. Course Title

F30e: Fundamentals of Computer Programming Python

3. Teacher

HAMIDULLAH, Sokout

4. Term

Fall 2

5. Course Requirements (Courses / Knowledge for this course) and Important Information

Fundamentals of Computer Systems (both courses can be taken concurrently)

6. Course Overview and Objectives

Programming is the foundation of every other subject in ICT. By becoming proficient in programming, students will be able to actively participate in projects involving system creation. Programming is also necessary for testing ideas, constructing and maintaining networks and servers, and in many other areas.

The course first reviews the fundamentals of procedural programming through experimental exploration, using the dynamic, interactive, object-oriented Python language. This course is the pave for Data Science and AI.

7. Course Outline

- 1 Course orientation, Python Objects and Data Structure Basics
- 2 Python Data Structure Advanced
- 3 Python Statements
- 4 Exercises
- 5 File Handling
- 6 Methods and Functions
- 7 Proiect-1
- 8 Exercises
- 9 Object Oriented Programming
- 10 Exercises
- 11 Errors and Exceptions Handling + Web Scraping
- 12 Python Database (MySQL) + Python Modules
- 13 Python GUI (Django + Gradio)
- 14 Exercises
- 15 Student Final Project
- 16 Presentation/ Reflection

8. Textbooks (Required Books for this course)

For this course, we prefer to use Jupyter Notebook. Jupyter Notebook Server available in case students have any difficulties with their own PCs

9. Reference Books (optional books for further study)

Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to

Programming

Author: Eric Matthes

Publisher: No Starch Press

Online Resources

(1) Become able to read, understand, and modify programs written in Python. (2) Become able to develop a small application. (3) Can write and use Python scripts for everyday tasks. (4) (5) (6) (7) (8) 11. Correspondence relationship between Educational goals and Course goals Educational goals of the school Course Goals Educational goals of the school Course Goals High level ICT Basic academic skills (1) (2) (3) Specialized knowledge and literacy (2) (3) Ability to continually improve own strengths (3) Ability to discover and resolve the problem in society Prudomental Competencies for Working Persons Professional ethics 12. Evaluation Goals Evaluation Method & point allocation examination Quiz Reports Presentation Deliverables Other (1) (2) (3) Ability to students to solve in order to evaluate the understanding of students and motivate them for further learning. Expected codes should be without errors and original.	10. Course Goals (Attainment Targets)							
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recommended to have specific instructions for code implementation.								
Deliverables 1. Individual or group assignment will be assigned for the students with	Deliverables	1 Individual	or group or	ecianment 14	ill he acciona	d for the stud	ante with	
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focus on learning goals (1,2 and 3). The evaluation will be based on how		the students understand the exercises and participation.						
		2. The results required by the exercise can be achieved.						
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focus on learning goals (1,2 and 3). The evaluation will be based on how the students understand the exercises and participation. 2. The results required by the exercise can be achieved.		l						

14. Active Learning Hourly percentage of active learning within the whole class time		I		
Tourny percentage of active learning within the whole class time		60%		
Active learning such as problem solving assignment using the knowledge and skills acquired in class.				
2 Active learning such as group works and discussions.				
3 Outcome presentations and feedbacks.				
4 Students actively make decisions on how the class should b	e conducted.	Not at all		
15. Notes				
16. Course plan				
(Notice) This plan is tentative and might be changed at the time of delive	erv			
Lesson 1: Python Objects and Data Structure Basics	re + Exercises			
What is programming? We consider solving everyday tasks, first by writing exact and detailed instructions. Students learn the bas through a few simple exercises and use it to test their understand	ics of the Pyth	non language		
What is programming? We consider solving everyday tasks, first by writing exact and detailed instructions. Students learn the bas	ics of the Pyth	non language		
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Lesson 5: File Handling	Lecture + Exercises				
Introdcue the additional built-in sequence types, Dictionaries and Sets in Python.					
Lesson 6: Methods and Functions	Lecture + Exercises				
Built in Methods in Python User define Methods					
Lesson 7: Project-1	Exercises				
Summarize the previous knowledge and practice comprehensive	ly.				
Lesson 8: Exercises	Exercises				
Summarize the previous knowledge and practice comprehensive	ly.				
Lesson 9: Object Oriented Programming	Lecture + Exercises				
Introduce the the concept of Object Oriented Programming.					
and the transfer of the second					
Lesson 10: Exercises	Exercises				
Summarize the previous knowledge and practice comprehensive	lv				
Tourinanze the previous knowledge and practice comprehensive	iy.				
Lesson 11: Errors and Exceptions Handling + Web Scraping	Lecture + Exercises				
Errors and Exeptions Handling with Python					
2. Web Scaping concept and implementation with Python					
Lesson 12: Python Database (MySQL)	Lecture + Exercises				
Learn how to use the Python library to connect to database, and operate the data in Python.					
Introduce the fundamental packages for scientific computing with Pandas.	h Python: Numpy, and				

Lesson 13:Python GUI (Django + Gradio)	Lecture + Exercises					
Intoducing the Graphical User Interface Framework with Python.						
The most common frameworks (Django) will be discussed, as well as Gradio which is an open source python package that can be used to quickly build a demo or web application for AI based solutions						
Lesson 14: Exercises	Exercises					
Summarize the previous knowledge and practice comprehensivel	ly.					
Lesson 15-16: Final Project Presentation/ Reflection	Presentation					
Presentation and discussion						