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|  |  UNIVERSITY OF ECONOMICS AND LAW **FACULTY OF ACCOUNTING – AUDITING** **AUDITING DEPARTMENT** |

**GENERAL COURSE OUTLINE**

***Sample 8: Module outline***

1. **Course Title and Code:** MAU 4012 – Advanced Accounting and Auditing Data Analysis
2. **Number of Credits**

Total Credits: 3 Theory: 3 Practice: 0

1. **Lecturer in charge**

PhD. Nguyen Vinh Khuong, PhD. Dong Quang Chung

1. **Learning Materials**

[1] Kumar, S. Python for Accounting and Finance: An Integrative Approach to Using Python for Research. Cham: Springer Nature Switzerland. (2024).

 [2] John Mueller & Luca Massaron, Python for data science, John Wiley & Sons (2019)

1. **Course Information**
2. *Course ojectives*

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| **Objective****(COx)****(1)**  | **Objective description****(2)** | **Course Learning Outcome (CLOx)****(3)** | **Cognitive Level****(4)** |
| CO1 | Design and develop an auditing data analysis process using the Python programming language, integrating knowledge of variables, data structures, and libraries. | CLO1 | 5 |
| CO2 | Libraries can be applied to classify, organize and analyze accounting and audit data. | CLO2 | 4 |
| CO3 | Implement and adjust techniques for cleaning accounting and audit data, distinguish appropriate operations in each practical context. | CLO3 | 4 |
| CO4 | Analyze and evaluate the effectiveness of data visualization charts, flexibly apply graphic libraries in Python to transmit accounting and audit information. | CLO4 | 4 |

*(1): Symbol representing the course objective.*

*(2): Description of the objectives, including active verbs, learning outcome topics, and general application context.*

*(3), (4): Symbols for the Program Learning Outcomes (PLOs) and the corresponding cognitive levels assigned to the course.*

*b. Prerequisite/Preceding/Concurrent Courses:*Write the code – the name of the module before or in parallel.

*c. Other Requirements:*Record any other requirements that the instructor deems necessary.

1. **Course learning outcomes**

*Specific items or Course Learning Outcomes (CLOs) and the level of instruction (I, T, U or I, R, M)*

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| **Course Learning Outcome****(1)** | **Course Learning Outcome Description** **(2)** | **Program Learning Outcome (PLOs)**  | **Teaching Level (I, T, U or I, R, M)****(3)** |
| CLO 1 | Design and development of auditing data analysis process in Python | PLO2 | M |
| CLO 2 | Apply libraries to organize and analyze accounting data | PLO5 | R |
| CLO 3 | Implementation and adjustment of accounting and auditing data cleaning techniques | PLO6 | R |
| CLO 4 | Analyze and practice data visualization and information extraction | PLO8 | R |

***(1):*** *Symbol representing the Course Learning Outcome (CLO).*

***(2):*** *Description of the CLO, including active verbs, CLO-related topics, and specific application context.*

***(3): I (Introduce):*** *initial exposure to the concept;* ***T (Teach):*** *instruction and practice;* ***U (Utilize):*** *apply in context;* ***or alternatively: I (Introduce):*** *initial exposure;* ***R (Reinforced):*** *strengthened through practice;* ***M (Mastery):*** *demonstrate full competency*

1. **Course content of the Course**

The course will provide knowledge of the python programming language and its application to the visualization of some accounting and auditing data, as well as the analysis of auditing accounting data. First, the subject briefly introduces the Python programming language through variables, data types, the use of loops, and some necessary functions and libraries. Next, reading the data through tables, Excel files, CSVs, or any other type of tabular data needs to be done. Then, the operation of cleaning the data, preparing the data in a state ready for visualization is very necessary. The problem of data visualization is done to transform raw data into easy-to-use, easy-to-visualize charts. Data analysis helps users to analyze some data for better accounting and auditing.

1. **Assessment**

*(Assessment components, assessment tasks, assessment criteria, assessment standards, and weighting – demonstrating alignment with the Course Learning Outcomes (CLOs))*

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| **Assessment Component****(1)**  | **Assessment Task (Ax.x)****(2)** | **Course Learning Outcome****(CLOx)****(3)** | **Assessment Criteria****(4)** | **Assessment Duration****(5)**  | **Weight****(6)** | **Sub-weight****(7)** |
| A1. Formative Assessment | A1.1 | CLO1 | Group Presentations | 45 minutes/group | 25% | 100% |
| A1. Formative Assessment | A1.2 | CLO4 | Essay | 45 minutes | 25% | 100% |
| A2. Final Assessment | A2.1 | CLO2, 3 | Essay | From 15 to 20 pages | 50% | 100% |

***1):*** *Assessment components of the course.****(2):*** *Codes for the assessment tasks.****(3):*** *CLOs being assessed.****(4):*** *Assessment criteria such as individual/group homework, in-class individual/group assignments, projects, course papers, etc.****(5):*** *Duration of the assessment in minutes (if conducted in class).****(6):*** *Weight of each assessment task in the total course grade.****(7):*** *Weight of each assessment task within the respective assessment component.*

**Prepared by: PhD. Nguyen Vinh Khuong
Head of Department: PhD. Nguyen Hoang Dieu Hien**