Course Name : Advanced Program in Python

Course Code	Course Type	Regular Semester	Lecture (hours/week)	Seminar (hours/week)	Lab. (hours/week)	Credits	ECTS
CMP 404	B	Spring	3.00	1.00	0.00	3.50	6.00

Lecturer	Ahmet Fatih Ersoy, PhD
Assistant	Klaudia Tabulla, Msc
Course language	Albanian
Course level	Master
Description	In this course we aim to provide students with basic knowledge of python programming languge and than jump into more advanced topics related to data science like classification algorithms, regression analysis clustering. Learn how to use relevant libraries for advanced scientific calculations.
Objectives	Students can easily solve basic problems using python and know how to apply data science algorithms in different data sets.
Core Concepts	Variables, loops, conditionals, strings, lists, dictionaries, regression analysis, clustering

Course Outline

Week	Topic
1	Explanation of the basic concepts of python. Variables and data types. Declaring and manipulating data in python. Creating a working environment on personal computers by installing Anaconda and jupiter notebook programs. Practical introduction to python Programming fq 3-9 Udemy
2	Using if and if else conditionals in python. Solving practical exercises using variables with different types of data and conditionals.
3	Explaining the basic concepts of iteration and using loops in python. Using the for loop and solving practical exercises using the for loop.
4	Explaining the basic concepts of iteration and using loops in python. Using the while loop and solving practice exercises using the while loop.
5	String data type. Usage storage and string manipulation.
6	Lists, declaring lists, creating a new list, printing data from a list. The application of various functions and methods that are applied to a list to perform specific tasks. Practical introduction to python Programming pg. 57- 62
7	Difference between lists and strings. The same methods that are applied to strings and lists and what changes a list or a string from a certain method. More detailed information about lists. Practical introduction to python Programming pg. 65 - 72
8	Midterm Exam
9	Dictionaries. Structuring data using dictionaries. How to create a new dictionary, how to add data to a dictionary we have created. You can change and print the data. Practical introduction to python Programming pg. 99 - 104
10	Linear Regression Basics of data classification using python. Applying linear regression to continuous data using a concrete dataset. Udemy
11	Logistic Regression Applying logistic regression with categorical data using the necessary methods and libraries in python with a concrete dataset. Udemy

12	Clustering with continuous data. Clustering or gathering data according to similarity by dividing them into certain groups. We apply clustering algorithms in python using continuous data. Udemy
13	Clustering with continuous data. Clustering or gathering data according to similarity by dividing them into certain groups. We apply clustering algorithms in python using categorical data. Udemy.
14	Project Presentation
15	Review
16	Final Exam

Prerequisites	The student must attend the course at a minimum rate of 75%.
Literature	• A practical introduction to python programming
References	

Course Outcome

1	Students can easily solve basic problems using python and know how to apply data science algorithms in different data sets.

Course Evaluation

In-term Studies	Quantity	Percentage
Midterms	1	20
Quizzes	1	10
Projects	2	10
Term Projects	1	20
Laboratory	1	10
Class Participation	0	0
Total in-term evaluation percent		**70**
Final exam percent		**30**
Total		**100**

ECTS Workload (Based on Student Workload)

Activities	Quantity	Duration (hours)	Total (hours)
Course duration (Including the exam week: 16x Total hours of the course)	16	4	64
Study hours outside the classroom (Preparation, Practice, etc.)	14	5	70
Duties	4	4	16
Midterms	1	2	2
Final Exam	1	2	2
Other	0	0	0
Total Work Load			**154**
Total Work Load / 25 (hours)			**6.16**
ECTS			**6.00**