Ministry of Higher Education and Scientific Research
Lebanese French University – Erbil
College of Engineering and Computer Science
Department of Computer Engineering

Programming and Problem Solving-II

Third Year – Second Semester

Asst. Prof. Ashish Sharma

Academic Year: 2023-2024

Course Book

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S. No.	Information	Details
1.	**Course Name**	Programming and Problem Solving-II (Python)
2.	**Course Code**	CE302PPS
3.	**Lecturer In-charge**	Ashish Sharma
4.	**College/Department**	ECS/Computer Engineering
5.	**Contact Information**	E-mail: ashish.sharma@lfu.edu.krd Mobile No.: 0964-7507231261
6.	**Time (in hours) per Week**	Theory: 02 Hours Practical: 02 Hours
7.	**Office Hours**	Sunday to Thursday
8.	**Teacher's Academic Profile**	Master of Technology in Computer Science (CS) Degree passed in year 2012 from Jamia Hamdard University Campus, New Delhi, India with 08.09 CGPA. (Division: First) Master of Computer Applications passed in the year 2007 from MIET, Meerut, UP, India is affiliated to UP Technical University Lucknow, India. (Division: First) Bachelor of Science passed in the year 2003 from NAS PG Degree College, Meerut, UP, India affiliated to C.C.S. University, Meerut, UP, India with (Mathematics, Optical Instrumentation and Physics). (Division: Second) To enhance my knowledge, I have attended and presented many seminars and conferences on technically good research topics during my whole career and study yet. Also I work on, to minimize the gap technically of our society from technological aspects and physical aspects.
9.	**Academic Title**	Assistant Professor
10.	**Keywords**	Introduction for Programming and Problem Solving, Introduction to Python, Python Program Structure using Control flow, Data Structures, Class and Objects.
11.	**Course Overview:** ● This course is designed to impart knowledge on the Data Science concepts and implementation using Python with examples and applications. ● Get an idea of Machine Learning Algorithms. ● Discuss about control flow, functions and data structures. ● Discuss about Machine Learning Libraries for Scientific Computing.	

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12.	**Aims & Objective:** The Students are: • Able to design program for any application using Python. • Able to construct program using various algorithms for distinct requirements. • Able to understand about data analytics concepts using Python. • Able to design applications using data storage for long time in the form of files. There are many different types of files as per requirement.
13.	**Course Requirement:** • All students should attend lectures carefully. • All students should attend on Classroom Tests, Discussions, their Assignments, and Examinations such as Mid-term and Final.
14.	**Teaching and Learning Method:** • White Board • PPT Presentation • Team Work • Project Show (Practical Session) • Assignments
15.	**Assessment Scheme:** • 5 % Assignments/Attendance • 10 % Class Tests and Quizzes • 25 % Mid-term Examination • 10 % Practical Examination • 50 % Final Examination
16.	**Students Learning Outcome:** • Able to think about how to plan for programming to develop a new program or modify an existing program. • Able to know about how to analyze, design and develop an appropriate program. • Able to know about how to use syntactical and logical techniques for developing a program. • Able to know about how to work on software modules development. • Able to know about how to develop a proper documentary of a system for further use or study.
17.	**Course Reading List and References** • **Book:** Wes McKinney- **Python for Data Analysis** *Data Wrangling with Pandas, NumPy, and IPython*- O'Reilly Media, Inc., Second Edition.-2017 • **Book:** Doug Hellmann**-Python Module of the Week**- 2020
18.	**Course Content**

Course Content

S. No.	Week	No. of Hours	Topics
1.	**Week-1**	4	**Functions**
2.	**Week-2**	4	**Class and Objects**
3.	**Week-3**	4	**Introduction to Machine Learning**
4.	**Week-4**	4	**Essential Libraries and Tools-I** (jupyter notebook, numpy, pandas, scipy)
5.	**Week-5**	4	**Essential Libraries and Tools-II** (matplot lib, seaborn, sklearn, scikit learn, mglearn) **A First Classification Application**
6.	**Week-6**	4	**Supervised Learning-I**
7.	**Week-7**	4	**Supervised Learning-II**
8.	**Week-8**	4	**Supervised Learning-III**
9.	**Week-9**	4	**Unsupervised Learning & Preprocessing-I**
10.	**Week-10**	1	**MIDTERM**
11.	**Week-11**	4	**Unsupervised Learning & Preprocessing-II**
12.	**Week-12**	4	**Unsupervised Learning & Preprocessing-III**
13.	**Week-13**	4	**Representing Data & Engineering Features-I**
14.	**Week-14**	4	**Representing Data & Engineering Features-II**
15.	**Week-15**		**Final Examination**

19.	**Examinations:** • **Compositional:** In this type of exam, the questions usually start with explain (How…? / What …? /Why…?) With their typical answers. (Example should be provided)

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	• **True or False:** In this type of exam, a short sentence about a specific subject will be comment on the trueness or falseness of this particular sentence. (Example should be provided) • **Multiple Choices:** In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. (Example should be provided). • **Fill blanks:** The description may be given and ask. • **Matching:** A number of questions in one side and their answers in another side will be presented. It will ask the students to match the questions with correct answers.
20.	**Notes:**