



e-Rozgaar Center
Institute of Education and Research
University of the Punjab
Lahore



Program: Python for Machine Learning	
Course Title: Python for Machine Learning	Course Type: Technical
Duration: 3 Months	
Prerequisites	FA/FSc /ICom/ICS/DAE/A-Level or equivalent qualification and above
Introduction	<p>The purpose of this course is to give the students a hand on training of implementation of machine learning models using python and its libraries. This course will enable the participants to be able to get skills to either get job related to machine learning or help in their academic projects.</p> <p>Machine learning is an extremely important field used in many areas of business analysis, data analysis, artificial intelligence, robotics and in several statistics related fields. This training will help trainees in kick starting their career in lucrative field of machine learning</p>
Learning Objectives	<p>After the successful course completion students will be able to:</p> <ul style="list-style-type: none">● Learn and understand the Python language.● Implement machine learning models.● Load data into Python.● Perform data analysis on a given problem.● Fine tune models using machine learning techniques.● Present data in understandable form to extract results.● Learn about freelancing and different online websites for freelancing.<ul style="list-style-type: none">○ Fiverr○ Upwork○ Freelancer.com● Be able to optimize their profile and get projects on freelancing websites.
Course Contents	<p>Topic & Contents</p> <p>1. Python Introduction</p> <ol style="list-style-type: none">1.1. Introduction to Python1.2. Setting up the python environment1.3. Anaconda Installation1.4. Py-Charm and Jupyter Notebook1.5. Basic syntax for Python1.6. Variables and Data Type in python1.7. Machine Learning Introduction1.8. Assignment 1 Basic Data type strings and numbers <p>2. Data in Python</p> <ol style="list-style-type: none">2.1. Lists and list comprehension in Python2.2. Dictionary and Tuple in Python2.3. Set in Python2.4. Training and Test Set2.5. Regression2.6. Logistic Regression2.7. Decision Trees2.8. Assignment2.9. Create Full frontend for a Website

	<ul style="list-style-type: none"> 3. Control flow in Python <ul style="list-style-type: none"> 3.1. Loops in Python 3.2. Conditionals in python 3.3. Lambda expression 3.4. Map Zip Enumerate 3.5. File Handling 3.6. Over-fitting Under-fitting and Generalization 3.7. KNN 3.8. Random Forest 3.9. Quiz 1 4. Numpy <ul style="list-style-type: none"> 4.1. Introduction to Numpy 4.2. Numpy function 4.3. Arrays in numpy 4.4. Cross Validation 4.5. K splits 4.6. Assignment 5. Data Visualization in Python <ul style="list-style-type: none"> 5.1. Matplotlib library 5.2. Seaborn library 5.3. Feature Engineering 5.4. Regression vs Classifiers 6. Panda Library <ul style="list-style-type: none"> 6.1. Introduction to Panda Library 6.2. Manipulating Data Frames 6.3. Loading Datasets 6.4. Clustering 7. SkLearn Library <ul style="list-style-type: none"> 7.1. Building a simple model using SkLearn 7.2. Implementing ML models 7.3. Random Forest 7.4. Hyper heuristics 8. Algorithm Chains and Pipelines <ul style="list-style-type: none"> 8.1. Cross Validation and its techniques 8.2. Grid Searching and Pipelines 8.3. Minimizing Error 9. Freelancing topics <ul style="list-style-type: none"> 9.1. Optimizing Fiverr Gigs 9.2. Introduction to Freelancer.com 9.3. Creating Profile in Freelancer.com 9.4. Creating Profile in Upwork.com 9.5. Writing a Cover letter 9.6. How to bid on projects 9.7. Different tools in Freelancing 9.8. Project Delivery and Deadlines 9.9. Art of Upselling 9.10. LinkedIn Profile optimization 9.11. How to win direct clients 9.12. Creating profile in PeoplePerHour.com
Textbooks	“Hands-On Machine Learning with Scikit-Learn 2019” Aurélien Géron

Suggested Readings	https://www.geeksforgeeks.org/machine-learning-with-python/
Teaching/Learning Strategies	<ul style="list-style-type: none"> ● Lectures ● Class discussion on all topics ● Multimedia ● PowerPoint Slides ● Hands-on Practice
Course Activities	<ul style="list-style-type: none"> ● Quizzes ● Assignments ● Projects ● Daily Hands-on Practice
Evaluation Criteria	<p>Assignment will be submitted on Google Classroom portal for assessment. Late assignments will not be accepted. Grades are weighted according to the following scale:</p> <p>20%-- Quizzes (5+5) 30%-- Mid 20%-- Project 30%-- Final Evaluation 100%-- Total</p>
Training Mode	Physical-Face to Face
Fee	Rs. 19,000/- Course Fee Rs. 1,000/- Registration Fee