**-Note: The suggested course duration is a** *guideline***. Course topics and duration may be modified by the instructor based upon the knowledge and skill level of the course participants.**

KEY : Typical Class Structure (of a **non-first** class):

Last class : class previous to the discussed class

This class : the current class

Next class : class coming up after this class

GREEN : Before Class

RED : IN Class

YELLOW : BLENDED

~~STRIKE-THROUGH~~ : Not applicable for this class

**LESSON PLAN**

**Data Visualization using Python, Matplotlib, Pandas and Seaborn**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Step No | Activity Name (FOR FIRST CLASS) | Description |
| Before Class | 1 | Review the Video Lectures of the last class on LMS | Watch videos online of last classes lecture. |
| Before Class | 2 | Activities of last class | Finish activities of last class, such as reading handbook, chapters from a book, watch a movie, listen to podcast, capstone etc as suggested by your teacher |
| Before Class | 3 | Finish Assignments of last class | Finish Assignment of last class |
| Before Class | 4 | Perform grading duties : Peer-grade assignments of last to last class as applicable | Grade the assignment of your randomly assigned peer from another module or same module. This will make the student think and remember. Student will feel responsible. |
| Before Class | 5 | Watch the lecture videos of this class from the link below: | Before coming to the class, watch the lecture videos of the next class you are going to attend |
| ~~In Class~~ | ~~6~~ | Discuss Assignment Solution in a Quiz Like interactive format | Discuss the solutions to last classe’s assignment. This will also serve as a recap/revision of last class. |
| In Class | 7 | Attend Lecture |  |
| In Class | 8 | Review Class Learning Outcomes  Matplotlib Installing and setting up visualization libraries  Procedural methodology of visualization creation  Oops methodology of visualization creation  Canvas and Axes  Subplots  Figure size, aspect ratio and DPI  Saving figures  Legends, labels and titles  Setting colors, linewidths, linetypes  Line and marker styles  Plot ranges  Common plots – scatter, histogram, boxplot  Logarithmic scale  Placement of ticks and custom tick labels  Scientific notation  Axis number and axis label spacing  Axis spines  Twin axes  Text annotation  subplot2grid  gridspec  Colormap and contour figures  3D figures  Pandas Viz  Style Sheets  Plot types:  Area  Barplots  Histograms  Line Plots  Scatter Plots  BoxPlots  Hexagonal Bin Plot  Kernel Density Estimation plot (KDE)  Visualizing Time Series Data  Seaborn  Distribution Plots  jointplot  pairplot  rugplot  kdeplot  Categorical Data Plots  barplot and countplot  countplot  boxplot VS violinplot  stripplot and swarmplot  Combining Categorical Plots  factorplot  Matrix Plots  Heatmap  clustermap  Regression Plots  Grids  PairGrid  pairplot  Facet Grid  JointGrid  Style and Color  Objective:  At the end of this class participants should be able to   * Learn the use and relationship between 3 prominent visualization libraries * Learn their strengths and weaknesses * Lean which type of plot is to be used which with type of data * Learn the correct use of colors in data visualization * Learn to effectively present data graphically   Learning Outcome:   1. Learner will perform data mining on Emergency (911) Calls: Fire, Traffic, EMS for Montgomery County, PA. This real-world data-set is provided by Kaggle. Student will visualize the data using various and appropriate visualization libraries. 2. Learn will download the Titanic dataset from Kaggle and will use the data to tell a story through visualization. | Review the learning objective and expected outcome of the current class |
| In Class | 9 | Attend Lecture | Attend class lecture |
| In Class | 10 | QnA Session | Get your doubts clarified of this lecture or last lecture based on blended learning performed outside the class |