**Learning Outcomes:**

1. Be able to create programs using Python and Numpy
2. Be able to use Pandas’s Dataframe to process tabular data
3. Be able to use matplotlib and seaborn to visualize data
4. Be able to use Tensorflow or Pytorch for doing tasks in machine learning
5. **Be able to perform classification and regression tasks for tabular data (sklearn)** and one of the following: image, video, audio, text, and time series.
6. For each machine learning’s task (classification, segmentation, detection, tracking, etc), students be able to:
   1. Collect data
   2. Label data (for datasets that do not require expert-knowledge for labeling)
   3. Clean and transform data
   4. Do statistics with data
   5. Learn data (use sklearn, tensorflow, and pytorch)
      1. Understand and use appropriate loss functions
      2. Understand and use appropriate metrics for evaluation
   6. Explain predictions (i.e., model’s results)

**Programming Exercises:**

1. Do programming exercises for Python and Numpy: Provided
2. Create a table mapping API Numpy and Tensorflow and Use Tensorflow’s API for solving numpy’s exercises
3. Create a table mapping API Numpy and Tensorflow and Use Tensorflow’s API for solving numpy’s exercises
4. Datasets:
   1. Load, Visualize, Transform datasets and Do statistics for datasets: with Pandas
   2. Load, Visualize, Transform datasets and Do statistics for datasets: with tensorflow
   3. Load, Visualize, Transform datasets and Do statistics for datasets: with Pytorch
5. Models for regression, classification, segmentation and detection
   1. Sklearn
   2. Tensorflow
   3. Pytorch