

#Learn_from_Home

Machine Learning & Basic AI with Deep Learning

Course Code : LFH/DAML/03

Duration: 130 hrs

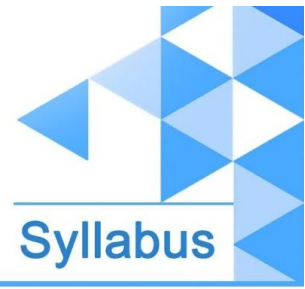
Course Syllabus

INTRODUCTION

This industry oriented course is developed by both the Software development division & Training division of **ipsr solutions limited**. IPSR is a **public limited IT company** with 20 years of expertise in [Software product development](#), [Training services](#), [Placement services](#) & [Digital Marketing services](#). During the past 2 decades, IPSR has trained candidates from **50+ countries** and helped **40000+ candidates** to build their IT career. Our IT services division is a pioneer in development of **Academic solution products**, incorporating cutting edge technologies like Artificial Intelligence, Data Analytics and Machine learning. Live industry experts from this IT division contribute a major role in delivering this course. Our placement division is having **1500+ placement tie-up companies** and we are conducting [recruitment on all days](#).

The Course curriculum is designed and developed by a team of expertise panel lead by following academicians

- ❑ **Dr. Mendus Jacob, M.Sc., M.Phil., Ph.D., MloD**
 - ❑ M.D & C.E.O - IPSR & Valin Technologies, U.K.
 - ❑ Director - MCA, Marian College, Kuttikkanam (Autonomous)
 - ❑ Former Director of School of Applicable Mathematics, M.G. University.
 - ❑ Academician and Entrepreneur with 30+ years experience
- ❑ **Dr. Sunil Job K.A, M.Sc, M.Ed, M.Phil, Ph.D., RHCE**
 - ❑ Chief of Academic Solutions - IPSR
 - ❑ Former college Principal and a Specialist in Data Analytics & Machine Learning
 - ❑ Blogger and a Resource person for National conferences
 - ❑ Academician with 25+ years experience



What you'll learn

- ✓ Importance of data in data analysis and machine learning and different visualization methods.
- ✓ How to visualize real world data and analyze the data using Excel and Tableau.
- ✓ Python Language Basics, Sequences, Functions, OOPS, RegEx, Database Programming using Python and MySql
- ✓ Python Packages for Basic Data Analytics - numpy, pandas, matplotlib, seaborn
- ✓ Do Exploratory and Explanatory data analysis using Python packages.
- ✓ Importance of Machine learning, its types and scope of Machine Learning in real world.
- ✓ How to implement machine learning algorithm and do prediction in real world data
- ✓ Importance of Machine Learning, Deep Learning and Artificial Intelligence, its scope in the real world.
- ✓ How to implement Deep Learning and learn about Deep Learning concepts.



Description

This course covers Data Analysis, Data Analytics using Python, Machine Learning and Basic AI with Deep Learning

Course Outcome (CO)

While successfully completing this course, the learner will be able to:

- Explain data, its types and relevance in data analysis and Machine Learning.
- Visualize real word data and analyze the data.
- Explain what is a dashboard and different dashboard types.
- Create a dashboard using excel.
- Summarize data and create various summarized graphs using pivot tables and pivot charts.
- Work with tableau and find insights from a dataset.
- Prepare Data visualization using dashboards in Tableau.
- Do data analysis using Python packages.
- Do data pre-processing using python
- Do Exploratory and Explanatory data analysis using Python packages.
- Explain Machine Learning,its types and scope of Machine learning
- Learn different Machine Learning algorithms .



- Explain the concepts of Deep Learning and AI
- Do prediction using real world data using Machine Learning and Deep Learning..

What does this course give you?

Skill required to implement Deep learning and Machine Learning in real world.

Course content

Data Explained

- What is data
- Relevance of data
- Types of data
- Data formats
- Data source

Data collection.

- Tasks for data collection

Data cleaning using Excel

- Text-to-columns
- Find and replace
- Filter
- Remove duplicates



- Delete all Formatting
- Remove Extra Spaces
- Change Text case
- Numbers Stored as Text into Numbers

Data visualization

- Types of data visualization
- Right method of chart selection
- Data visualization tasks using real world data

Dashboard

- What is dashboard
- Various types of Dashboards
- Ingredients for creating an effective dashboard.
- Workflow for creating dashboard
 - Steps for creating Dashboard

Pivot table using excel

- Summarizing data
- Rows and fields

Pivot chart using excel

- Creating various summarized graphs
- Selecting right data columns



Dashboard using excel

- Taking real world data to create excel dashboard
- Various settings in Dashboard design options

Tableau initialization

- Tableau installation
- Data source settings in tableau
- Data Interpreter
- Interface of Tableau sheet
- Various menu options

Data Integration using Tableau

- Inner join
- Left and right join
- Outer join

Visualization using Tableau

- Various graphs in tableau
- Real world data visualization tasks

Dashboard using Tableau

- Taking real world data to create Tableau dashboard
- Various settings in Dashboard design options



Introduction to Python

- What is Python
- The application areas of Python
- Download and install Python
- Execute Python program from command prompt and using IDLE
- Save programs with .py extension and execute it from prompt

Python Basics

- Data types and variables
- Operators and operator precedence
- Data type conversions
- Data input
- Comments

Python Flow Control

- If statement
- If.. elif.. else statement
- While loop
- For loop
- Break & continue
- Else clause

Python Sequences

- String
- List
- Tuple
- Dictionary



- Set

Functions and modules

- What is function
- Define a function
- Pass arguments
- Arguments with default values
- Arbitrary arguments
- Local and global variables
- Return a value from function
- Mathematical functions
- Random number functions
- Mathematical constants
- Recursive functions

Python classes and objects

- Class definition
- Creating objects
- Constructors & Destructors

Regular Expressions

- Match()
- Search()
- Search and replace
- Modifiers
- Patterns
- Character classes



- Repetitions

Database programming

- With MySQL
 - MySql datatypes
 - CRUD operations
 - Subquery
 - Join
 - Aggregate functions
 - Procedures

Numpy

- Ndimensional array
- Datatypes
- Random numbers
- Matrix operations

Pandas

- Series,Dataframe
- Importing csv, Exporting csv
- Groupby
- Describe,Info
- Iloc,loc
- Filtering
- Slicing



Matplotlib

- Line plot
- Scatter plot
- Histogram
- Box plot

· Seaborn

- Heatmap

Data pre-processing Using Python

- Data Cleaning
- Data Integration
- Data Reduction

Descriptive statistics theory

- Central tendency
- Standard deviation
- Interquartile range
- Histograms
- Distributions
- Skew
- Kurtosis
- Correlation

Exploratory Data analysis using python

- Drill down in graphs
- Obtaining inferences from graphs



Explanatory data analysis using python

- Finding a pattern from inferences
- Obtaining insights

Insights and patterns

- Pattern Explained
- Making inferences and finding Insights

Machine Learning Introduction

- Shallow Learning and Deep Learning
- Learning Methods
- Sklearn- machine learning modules

Supervised Learning

- Regression
 - Linear Regression
 - OLS Regression
 - Decision Tree Regressor
 - Random Forest Regressor
 - Cross validation – K-fold
- Classification
 - Logistic regression
 - Decision Tree
 - Random Forest
 - Support Vector Machine
 - Naïve Bayes classifier
 - K nearest neighbors
 - Cross validation – K-fold & Confusion matrix



- **Unsupervised Learning (Data mining)**

- Partitioning method: K-Means Clustering.
- Hierarchical Clustering method:
- Density-Based Clustering: DBSCAN.

- **Sample project explained**

Data Cleaning to Machine Learning

- **Introduction to Deep Learning (Theory)**

- Human Cognitive Abilities
- Neural Networks & similarity to human brain
- Real life applications

- **Artificial Neural network**

- Artificial Neural network architecture
- Artificial Neural network working

- **Working of neural network using mathematical visualization**

- Gradient descent
- Activation – ReLu, Sigmoid, Tan h
- Backward propagation
- Feed Forward Network
- Weight and bias

- **Keras using TensorFlow**

- Tensorflow introduction
- Keras introduction

- **Customer Churn Prediction Code using Deep Learning**

- **Deep neural network**

- Multi-layer perceptron
- Architecture
- Working

- **Convolutional Neural Network**

- Architecture & Working



- **Recurrent Neural Network**
 - Architecture & Working
- **Long short memory network**
 - Architecture & Working

Contact Us

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