Post Graduate Program on Applied Data Science with Deep Learning and Specialisation

(TEKS-RISE)

Course Duration: 4 months + 1 month Specialisation

Mode of Delivery: Online, LIVE, Instructor Led

Table of Contents

ABOUT THIS COURSE

Teksands Post Graduate Program on Applied Data Science with Deep Learning and Specialisation (TEKS-RISE) is designed specifically for the individuals looking to start or switch to a career in advanced Data Science. This course covers a broad range of topics including Statistical Techniques, Exploratory Data Analysis, Visualisations, a number of traditional Machine Learning algorithms, Deep Learning Algorithms and architectures using CNN, RNN, LSTM, Attention Model using TensorFlow and Keras, ML-Ops, Leadership in AI and Product Development trends and techniques. The purpose is to give the learner a well-rounded view and expertise so that he or she is job-ready on Day-1 and can solve a complex breadth and depth of problems after going through this program. There is a huge amount of emphasis on practical applications of the concepts learnt. We will walk you through worked-out projects and you will also have to work on your own projects to consolidate your understanding. By doing this, you create a sizeable portfolio of projects in your kitty that you may then showcase to a prospective employer.

INTENDED AUDIENCE

Anyone aiming for a Career Switch to Data Science, Machine Learning and Deep Learning roles.

PRE-REQUISITE

This course uses the Python Language for Data Science and Machine Learning Solutions. Although Python is covered in good detail at the beginning, some prior exposure to Programming Languages will be helpful.

TEACHING METHODOLOGY

The Delivery method is Online, Live Classes led by Professional, Industry Experienced Instructors.

DURATION

4 months + 1 month of Specialisation.

Weekend Timings: Saturday and Sundays between 10 am to 1 pm.
(Please check your specific course schedule)

CERTIFICATION

Certificates will be issued to every learner based on attendance and successful completion of the Course Assignments.

UNDERSTANDING DATA SCIENCE TRENDS AND MARKET

Data Science became a career buzzword for IT professionals when a Harvard Business Review termed it as "The Sexiest Job of the 21st Century". According to the U.S. Bureau of Labour Statistics, growth for data science jobs skills will grow about 30% year on year through 2026. At this point in time in 2021, the average salary of a Data Scientist / Analyst is to the tune of US$ 120K annually.

Demand for Data Science, Predictive Analytics, Machine Learning, Deep Learning and associated areas have been increasing in the past number of years as companies are discovering new methods for solving their problems in ways that were unthinkable in the past. A search in Naurki.com, India's largest job portal, reveals close to 100K active open positions waiting to be filled at any point in time.

Why Data Science is a sought after skill for employers: Companies across industries are rushing towards automated decision making for all of their departments and that is possible through the application of various Data Science, Analytics, Machine Learning and Deep Learning skills. Every functional field in any company are seeking out opportunities to keep making their systems smarter and decisions smarter – be it automated voice assistants, smart cars, smart factories, smart marketing and advertising, smart sales predictions, smart investment decisioning and many more.

The other reason why Data Science and all AI related fields will keep heating up is the proliferation of data. Our social and professional digital footprints are creating thousands of petabytes of data every day. These data are goldmine when it comes to the potential for doing more for business. And enters Data Science and AI to rummage through the data to bring out amazing automated decisions and insights that help businesses see and control future.

Skills Required for Data Scientists

If it is your goal is to become a Data Scientist, you have to first understand what it takes to become one, the skills and competencies that you should learn. Data Science is an amazingly interesting field, full of interesting concepts and power to create magic from Data.

Some of the skills that are fundamental to becoming a competent Data Science professional is understanding and intuition about data, basic and advanced modelling techniques, relational databases, statistical analysis techniques, Machine Learning or Predictive Analytics Algorithms including Deep Learning Algorithms. Apart from the above techniques, you need to learn languages and tools. Python is the de-facto standard language for Data Science with R Language coming second. There are tools like Tableau, KNIME, etc. that make it easy to perform Analytics and create Machine Learning/Predictive Analytics Pipelines in a Visual manner.

Comprehensive knowledge on Deep Learning, ML-Ops and AI/ML Product Development are critical knowledge areas for any Data Scientist/Data Engineer/Machine-Learning Professional. This course places a lot of focus into these areas so that there is no learning gap when you start on a Data Science/Machine Learning role.

COURSE OVERVIEW

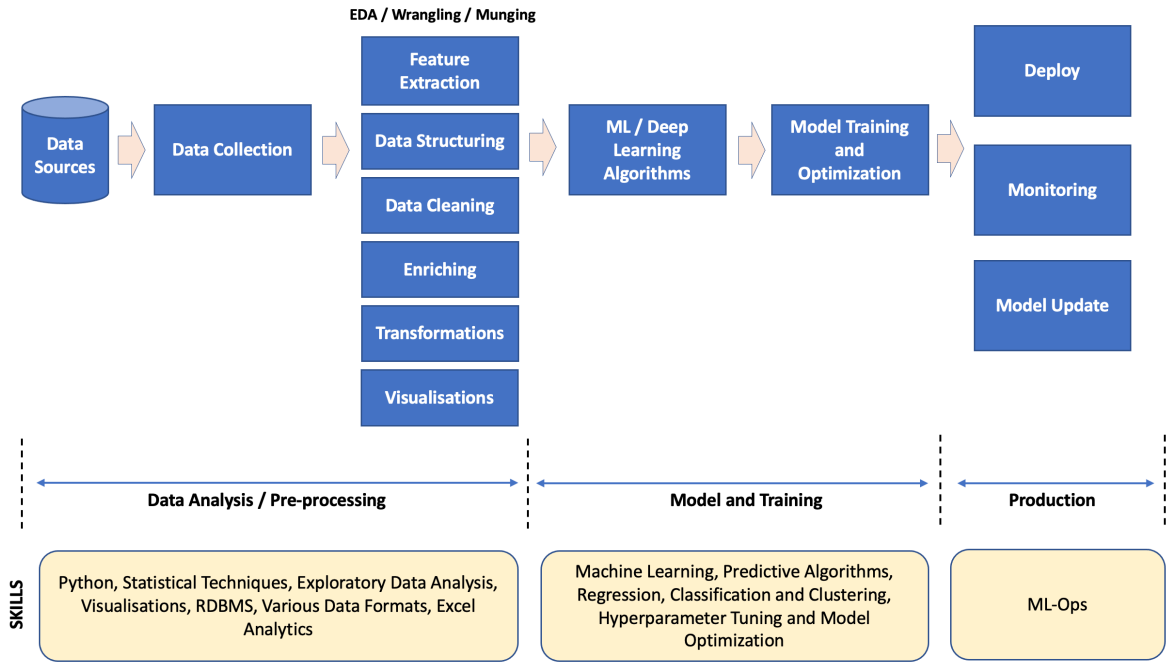
Teksands Post Graduate Program on Applied Data Science with Deep Learning and Specialisation (TEKS-RISE) is designed for aspiring Data Scientists to learn and apply skills through real-life hands-on projects. You'll learn how to use data to solve complex problems through Analytics and AI driven automations, improve business outcomes through better decisioning.

The curriculum prepares you to be a leader in this field through mastery of core data science concepts like Statistical Analysis of Data, Exploratory Data Analysis Techniques using Python, powerful Visualizations, Machine Learning, Deep Learning and Model Deployment in Production. By diving deep on key topics as above in a fully practical way, you'll be prepared to succeed within today's organizations. You'll also work with real data sets from top companies as you build a work portfolio that showcase your skills. Learn the systems and techniques that help organizations overcome data overload and make smart decisions.

CURRICULUM APPROACH

Curriculum for this Applied Data Science program has been modelled around the life-cycle of Data Science Projects. The aim is to make sure that the Data Scientists from Teksands' Post Grad Program are equipped to deal with all phases of the life cycle of a complex Data Science project and has achieved mastery for an effective career switch in this field. There is special emphasis on selection of Languages, Algorithms, Libraries, Tools, Projects and Assignments that enable our learners to achieve that.

There is special emphasis on Deep Learning and applications of Deep Learning for solving complex problems, ML-Ops so that learners have a hands-on exposure on what happens in real-life situations in terms of going live with your models and maintaining them in production. We also spend a week on industry trends and ML/AI product development practices and mechanics. These topics and exposures will enable our learners with the ability to take up a wide-variety of challenges and job roles.



Exploratory and Collaborative Programming

One of the key differences between traditional programming and Data Science is that in a lot of cases, Data Science projects are highly exploratory in nature without a clear project path charted. Data Scientists are expected to explore and discover trends, insights and information from the raw data. Exploration with the aim of discovery are repetitive, experimental and ambiguous in nature. Additionally, often such projects are highly collaborative. In this program, we will cover the techniques and nuances of Exploratory and Collaborative programming using cutting edge tools like Deepnote and Google Colab.

Business Domain Understanding

Data Scientists also need to have a great grasp on the business domains they are working on because they need to understand the relationship between the business domain, the problem statements and the data to be able to find, prepare and work with the right data. In this program, we will go through several use cases from various domains such as Financial domain, Retail, eCommerce, Telecom, etc. and develop domain to data mapping understanding amongst our students.

Quizzes, Assignment and Capstone

The following assessments are embedded within the program to create maximum impact for the students.

- Chapter-end Quizzes to assess your immediate understanding of the concepts taught.
- Chapter Projects to help you apply concepts to real scenarios.
- Research Project to help you go beyond the course boundaries and create a curious mindset.
- Capstone Project to consolidate all learnings into one large-collaborative real-industry project.

Leadership

Our PGP program also equips students for leadership with an end-to-end perspective on Data Science. Concepts such as a thorough understanding of Data Science engineering life-cycle, understanding of current trends and development which also includes writing a research paper.

Career Oriented Course

Topics and projects in PGDADS-S are curated with the Industry needs in mind. This course will help you secure a career in the Data Science field and Teksands career division will help you along the way to secure a career.

Pre-requisites and Students Backgrounds

Some exposure in any programming language is beneficial but not essential. Our Python programming module embedded within the PGDADS-S program will help students build solid base before moving on to Predictive Algorithms. We will also provide detailed insights in Statistical Techniques and Linear Algebra that are needed to understand Predictive or Machine Learning Algorithms.

Renowned Faculty

Teksands faculty members are the most talented, passionate and competent authorities in their fields. The industry experience behind them make sure that our learners are benefitted from their cumulative knowledge. Students get direct access to faculty through course forums and are assured of support even outside course hours and post course.

Student Commitment

This Post Grad program from Teksands is a Career program. As Teksands places the highest level of commitment into giving our learners the best possible guidance, the students also need to place equal commitment on the course for desired results. Data Science with all its concepts are an extremely novel and sophisticated field of study that requires a high degree of focus to grasp the concepts. Students need to study enough amount of hours beyond the classrooms and also complete the assignments and projects on a regular basis to make the most out of the course.

Program Structure

Program	Duration
Post Graduate Program on Applied Data Science with Deep Learning	4 Months
Specialisation Options (R Language, Tableau)	1 Month

Curriculum

The Post Graduate Program on Applied Data Science covers the following broad areas:

- Data Acquisition Techniques
- Exploratory Data Analysis using Pandas, Numpy libraries
- Visualizations using Matplotlib, Seaborn libraries
- Modelling and Predictive Techniques – Supervised Learning, Unsupervised Learning, Prediction Problems, Classification Problems, Clustering using Scikit Learn, StatsModel libraries
- Applied Part – Portfolio Projects
- Deep Learning with CNN, RNN, LSTM, Attention models using Tensorflow and Keras
- ML-Ops on GCP platform
- Data Science Leadership

Python will be used as the primary programming language throughout the course. Teksands will organise pre-course Python sessions for those with little or no exposure to Python.

COURSE STRUCTURE IN DETAIL

Week #	*What you will Learn*
Week-1	**Introduction to Data Science** • Introduction to Applied Data Science • Domains, Business and Data • Use Cases and Problem Statement understanding • Data Science Project Life Cycle • Exploratory and Collaborative Programming • Quiz
Week 1-2	**Collecting and Processing Data** • Advanced Data Structures and Manipulation using Python • RDBMS and writing SQL • Working with Files • Processing Big Data • Experiment Design and Analysis • Data Analysis using Excel • Quiz
Week 2-3	**Data Science Concepts** • Supervised and Unsupervised Learning • Predictive Modelling / Machine Learning • Types of Algorithms • Scenario-Algorithm Selection • Model Training Process • Cost Functions • Quiz
Week 4	**Statistical Techniques** • Descriptive Statistics • Inferential Statistics • Probability Theory • Tests of Significance • Quiz
Week 4-5	**Exploratory Data Analysis** • Statistical Techniques • Linear Algebra • Visual Exploration • Data Mining • Feature Engineering • Machine Learning Pipelines • Causal Inference • Quiz

Week #	What you will Learn
	• EDA Project Assignment
Week 5-6	**Predictive Modelling / Machine Learning 1 – Linear Regression** • Solving Prediction Problems through Linear Regression • Data Exploration • Pre-processing and Feature Engineering • Creating an LR Model • Model Statistics and Evaluation • Optimizing Models through RFE and VIF methods • Testing LR Assumptions • LR Project Assignment • Quiz • LR Project Assignment
Week 6-7	**Predictive Modelling / Machine Learning 2 – Logistic Regression** • Estimating Probabilities • Logistic Regression Cost Functions • Softmax Regression • Performance Metrics • ROC Curve and AUC • Optimizing Logistic Regression • Quiz • Logistic Regression Project Assignment
Week 7-8	**Predictive Modelling / Machine Learning 4 – Decision Tree and Random Forest** • Introduction to Decision Trees • Gini Index and Entropy • Measuring Performance • Introduction to Random Forest • Random Forest Process Steps • Model Performance and Tuning • Quiz • Random Forest Project Assignment
Week 8	**Predictive Modelling / Machine Learning 5 – Dimensionality Reduction** • Introduction to PCA (Principal Component Analysis) • PCA Process Steps • Data Standardization • Finding Covariance Matrix of our Dataset • Eigenvectors and Eigenvalues • Recast Data using new PCAs • Explained Variance Ratio and Scree Plot • Quiz • PCA Project Assignment

Week #	*What you will Learn*
Week 9	**Predictive Modelling / Machine Learning 6 – Advanced Classifier: SVM** • Introduction to Support Vector Machine • Linear SVM Classifications • Non-linear SVM Classification • Polynomial Kernel Trick • Quiz • SVM Project Assignment
Week 9-10	**Predictive Modelling / Machine Learning 7 – Clustering using K-Means** • Unsupervised Learning • Introduction to PCA • PCA Process Steps • Centroid Optimization / Convergence • Other Considerations • Optimizing Number of Clusters • Quiz • K-Means Project Assignment
Week 11	**Neural Networks and Deep Learning** • Neural Nets • Perceptron and MLP (Multi Layered Perceptron) • Introduction to TensorFlow • Introduction to Keras • Classification MLPs • Regression MLP • Quiz • Deep Neural Network Project Assignment
Week 12	**CNN and Image Processing** • CNN Architectures • Training a CNN • Image Pre-processing Techniques • Transfer Learning with CNN • TensorFlow Implementation of CNN • Object Detection • Quiz • Object Detection Project Assignment
Week 13	**RNN and LSTM** • RNN Architectures • Training an RNN • Unstable Gradients Challenge • LSTM Architecture • Training and Predicting a Time Series • Quiz

Week #	What you will Learn
	• LSTM Project Assignment
Week 14	**Natural Language Processing with RNN and Attention Models** • Generating Text using a RNN • Bidirectional RNN • Attention Mechanism • Encoder-Decoder Models • Natural Machine Translation using an Encoder-Decoder Model • Quiz • NLP Project Assignment
Week 15	**ML-Ops using Google Cloud Platform** • Understanding ML Lifecycle • Creating Docker Containers for ML Deployments • Manage Kubernetes Deployments • Setting up AI Pipelines • Training, Tuning and Serving a Model • Kubeflow Pipelines • CI/CD on KubeFlow Pipelines • Quiz and Assignment
Week 14-17	**Capstone Project** • Choice and Briefing of Capstone Projects • Research, Analysis and Methodology • Presentation Techniques – Paper and Visual
Week 16	**Deep Learning Product Development** • Current AI Trends • Start-ups and Products in Data Science/AI/ML • Upcoming genre of products • Understanding AI Products Development Lifecycle • Deep Learning Market

SPECIALIZATIONS

The following specialisations options are offered as part of this course. The students get to choose one from the following options.

Week #	What you will Learn
Week 18-21	**Option 1: Working with Tableau** • Create various Charts and Graphs • Create Dashboards • Create Data Hierarchies • Storytelling • Working with Parameters • Creating Data Extracts • Applying Filters • Calculated Fields • Mapping in Tableau • Advanced Charts • Publish to Tableau Online
Week 18-21	**Option 2: R Language** • Fundamentals of R • Vectors • Functions • Packages • Matrix • DataFrames • Visualisations using GGPlot2 • Creating a Linear Regression Model using R • Creating a Logistic Regression Model using R

REAL-LIFE PROJECTS

You will have the following projects to work on as part of the Course. Students will be provided with a broader choice of projects to choose from.

- Price Prediction Problems
- Customer Churn Analysis on Insurance or Telecom Domain
- Credit Card Fraud Detection
- Email Spam Filtering
- Sentiment Analysis using NLP Techniques
- Product Recommender Engine
- Social Media Analytics
- Image Recognition
- Driver Drowsiness Detection
- Sales Price Prediction System
- Text Similarity Detection (Plagiarism Checker)
- Customer Behavioural Segmentation
- Fake News Identification
- Image Captioning

FAQs

Will I get Job Assistance after this program?	Yes, Teksands will help you in securing a placement after successful completion of the course.
How is this Course Different from others in the Market?	Teksands Post Grad Program on Data Science focusses on students building a Portfolio of Industry Projects across all learning areas. This portfolio helps you demonstrate your ability to prospective employers and make a difference. Additionally, Teksands course will have important industry-related modules such as ML-Ops and AI Product Development which gives you critical edge in launching a successful career journey.
Are there instalment schemes available?	Yes, please speak to your career counsellor to get to know more on instalment schemes.
How much time do I have to devote on the course per week?	This is a career focussed course and to be taken very seriously by the students. We recommend a minimum of 10 hours study per week beyond the online classrooms to as much as possible. Your commitment will help you succeed.

For more Information, please visit teksands.ai or reach out to us on

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or
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