EDVANTAGE

Persian Gulf University

PRESENTING IN COLLABORATION

DATA SCIENCE & ITS APPLICATIONS IN OIL AND GAS

Duration: 3 Months

✓✓ **Certificate From Persian Gulf University**

✓✓ **Dedicated Internship/ Placement/Project Support**

✓✓ **Training Under World Class Data Science Trainers**

✓✓ **Learn Data Science From Scratch**

Faculties

Mehdi Tadayoni

Divyanshu Vyas

Neha Chugh Dwivedi

Jaiyesh Chahar

Ishan Appu

Get Opportunities In

Greenfield Oil and Trading Services Pvt Ltd

Rezlytix

Persian Gulf University

GEOIN SERVICES

Tridiagonal® Solutions
compute | innovate | develop

Marian Oilfield Services Private Limited

Why To Learn Data Science in Oil and Gas?

○ **Continuous job Cuts and lack of job opportunities in Oil & Gas sector**

○ **Increasing Opportunities in Oil & Gas Companies**

○ **To increase work efficiency by using data science application**

○ **Attractive Salary for Entry/ Experienced Level Engineers**

Applications of Data Science in Oil & Gas

- **Analyzing seismic and micro-seismic data**

- **Improving reservoir characterization and simulation**

- **Reducing drilling time and increasing drilling safety**

- **Improved petrochemical asset management**

- **Optimization of the performance of production pump**

- **Improved shipping and transportation**

Current Updates Of Data Science In Oil & Gas

- **More than 400,000 oil and gas sector jobs have been cut this year, according to Rystad**

- **Over more than 200k recently petroleum graduated are looking for job**

- **~53% of workforce concerned about job security**

- **Less than 15% of OG&C employees are data analytics/mathematic majors**

As per the recent Report by 2025 the demand of data science & Machine skills is expected to drive 27.9% increment in employment

Benefits of Joining The Program

○ **Certificate from Persian Gulf University**
Get 3 Months Certificate from Persian Gulf University after Completion

○ **Flexible & blended learning model**
Learn with the convenience and flexibility of recorded and live sessions. Because most working professionals want to participate in the program, live sessions will only be held on weekends

○ **Discussion Forum**
Participants will get a discussion forum after joining the program where they can ask their questions directly to faculty

○ **Hands on experience on Oil & Gas Projects**
A variety of different Oil & Gas case studies and projects discussed to provide clear understanding of the used cases in Oil & Gas Industry

○ **No Prior coding experience**
Coding is not required since we are starting from scratch

Internship/Placement opportunities in Oil & Gas Companies

Tie up with number of Oil & Gas companies to provide internship or placement opportunities to the trainees after the completion of the program

Course Journey

Statistics	**Python Fundamental**
Database Management	**Data Analytics**
Data Mining Application	**Machine Learning**
Deep Learning with TensorFlow and Keras	**Data Science & Machine Learning Projects**

Statistics

Sample or Population Data? ○

The Fundamentals of Descriptive Statistics ○

Measures of Central Tendency, Asymmetry, and Variability Lesson ○

Practical Example: Descriptive Statistics ○

Distributions ○

Estimators and Estimates ○

Practical Example: Inferential Statistics ○

Hypothesis Testing: Introduction ○

Hypothesis Testing: Let's Start Testing! ○

Practical Example: Hypothesis Testing ○

The Fundamentals of Regression Analysis ○

Python Fundamental
(by pressure, production and reservoir data)

Module 1 - Introduction to Python and Computer Programming Python

- Python - a tool, not a reptile
- There is more than one Python
- Let's start our Python adventure

Module 3 - Boolean Values, Conditional Execution, Loops, Lists and List Processing, Logical and Bitwise Operations

- Making decisions in Python
- Python's loops
- Logic and bit operations in Python
- Lists - collections of data
- Sorting simple lists - the bubble sort algorithm
- Lists - some more details
- Lists in advanced applications

Module 2 - Data Types, Variables, Basic Input-Output Operations, Basic Operators

- Your first program
- Python literals
- Operators - data manipulation tools
- Variables - data-shaped boxes
- How to talk to computer?

Module 4 - Functions, Tuples, Dictionaries, and Data Processing

- Writing functions in Python
- How functions communicate with their environment?
- Returning a result from a function
- Scopes in Python
- Let's make some fun... sorry, functions
- Tuples and dictionaries

Module 5 - Modules, Packages, String and List Methods, and Exceptions

- Using modules
- Some useful modules
- What is package?
- Errors - the programmer's daily bread
- The anatomy of exception
- Four simple programs

Database Management

Introduction to SQL

What is SQL?, Purpose of SQL, Who should learn SQL?, What are the subsets of SQL?, Data Definition Language, Data Manipulation Language, Data Control Language, and SQL vs. NoSQL

Introduction to Databases and RDMBS

What is a Database?, Database Objects, Database Tables, Table Records, Types of Database Management Systems, Relational Database Management Systems, and SQL/Relational Databases vs. No SQL Databases

Install a Database Engine

Download MS SQL Server or Oracle or MySQL Database Engine, and Install. Launch SQL Server Management Studio, Select New Query, and launch SQL Query. Type SQL Commands and Execute

Introduction to SQL

Focus on SQL Syntax, SQL keywords, SQL is not case sensitive, SQL Comments, SQL Commands, and writing SQL Statements

SQL Data Types

SQL Numeric data types, Date and Time data types, Character and String data types, Unicode character string data types, Binary data types, and Miscellaneous data types

SQL Operators

SQL Arithmetic Operators, Comparison Operators, Logical Operators, and Bitwise Operators

SQL Expressions

SQL Boolean Expression, SQL Numeric Expression, and SQL Date Expression

SQL Comments

SQL Comments, Comments are used to explain sections of SQL statements, or to prevent the execution of SQL statements. Single-Line Comments, and Multi-line Comments

Data Analytics

- Brief introduction of PowerBI application in Data analytics

- Easily create high-quality visualisation of different well data such as NPHI, GR, RHOB, DT... to simplify the data analysis and get ready-to- apply plots for visualization by python or powerBI

- Confidently use Python to solve different RESERVOIR parameters such as, porosity, water saturation evaluation in sandstone and carbonate reservoirs, different approach in shale evaluation, logs relationship, and representing various cross plot such as Pickett plot

Machine Learning

- Introduction to Artificial Intelligence and Machine Learning

- Well Data Preprocessing

- Supervised Learning in reservoir parameters estimation such as water saturation and compressibility factor

- Feature Engineering for porosity estimation

- Supervised Learning-Classification

- Unsupervised Learning, in facies analysis

- Time Series Modelling

- Ensemble Learning in net/pey zone detection

- Recommender Systems

Data Mining Application

- Data Mining description and introduction all steps in CRISP-DM

- SPSS application in Data (wells) Mining

- Python application in Data (wells) mining

- Reservoir characterization Understanding; Formation evaluation role in FFS

- Data Understanding by Python; well logs, core data, cutting description, geological data

- Data Preparation by Python and SPSS; data cleaning, missing data handling, new data construction, and Integration well log data

- Modelling; Selecting Modeling Techniques, generating a Test Design, Building the Models and Assessing the Model

- Selecting the proper ML approaches to solve a particular problem in petrophysics; depending on the type of the challenges, data availability, data quality and solution requirements

- Porosity estimation by log data by using Linear, Multi and polynomial Regression, Decision Tree, ANN

- Well log construction such as CGR, DT and RHOB in bad hole intervals by using different ML approaches

Deep Learning with TensorFlow and Keras

○ AI and Deep Learning Introduction

○ Artificial Neural Network and reservoir parameters estimation

○ Deep Neural Network and Tools in permeability analysis

○ Convolutional Neural Net (CNN)

○ Deep Neural Net Optimization, Tuning, and Interpretability

○ Recurrent Neural Networks

○ Autoencoders

Data Science & Machine Learning Projects

The basic idea is to introduce participants the concepts of exploratory data analyses, machine learning workflows and most importantly, data analytics and machine learning use cases in Oil & Gas applications. A variety of case studies will be discussed in order to provide attendees a better grasp of the applicability
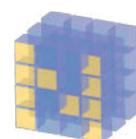
AI & ML Research Project

- **Geosciences:** Facies classification or well log prediction
- **Reservoir:** PVT estimation
- **Drilling:** ROP estimation
- **Completion:** Fracture characterisation
- **Production:** Liquid loading detection

Data Science Research Project

- Well Test Analysis
  1. Drawdown 2. Buildup
- Reservoir Simulation (1D) from scratch
- Well Log Visualization and High Level Interpretation
- Thermal Stimulation concept using Darcy's law in Python

- 2 Phase Rel Perm Models - Hands on Simple Data Visualization
- Klinkenberg Effect
- MBAL
- Effect of Skin on BHP
- Compaeison b/w Vogels and Fetkovich IPR models

Languages & Tools

Get Opportunities

Greenfield Oil and Trading Services Pvt Ltd

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Admission Details

Eligibility

This is open for all Undergraduates/ Graduates or Working professionals from petroleum, Geology & Mechanical.

Program Fee

INR 22,500 | **USD 300**

Duration: 3 Months

APPLY NOW

https://edvantage.org.in/register

Registration Link For Iran Students/Professional
https://karafarini.pgu.ac.ir/event/69

Payment

Candidates can pay the program fee through Net Banking, Credit/Debit Cards, Gpay/PhonePe/Paytm UPI.

TRAINERS

Mehdi Tadayoni
Energy Analyst at Genesis

Mehdi is a data-driven Lead Petro physicist and Reservoir Geomechanics specialist with 16 years of experience in monitoring, processing, and interpretation of open hole, cased hole, and advanced log (FMI, SONIC SCANNER, DSI, NMR...) with leading and cooperating in 22 MDP, FDP, and FFS in Iran, Oman, Turkey, Malaysia, and Austria.

Divyanshu has a background in data science and is a well-known figure in the oil and gas industry for data science. He has worked on a variety of full-scale and mini-scale projects utilizing Python and its packages, spanning from basic reservoir engineering concepts to drilling engineering concepts to oil production engineering and numerical simulations. He regularly maintains a GitHub Repository for Oil and Gas Data Analysis as well as Machine-Learning and Deep-Learning, in order to assist and mentor the community with everything he learns

Divyanshu Vyas
Data Scientist & Founder Petroleum from Scratch

Neha Chugh Dwivedi
Director of Business Operations at Turnera Tech Private Limited

14 years of expertise with Java/J2EE/C++/Python technologies in comprehensive software development processes. Algorithms, Database Management, and Data Mining are post-graduate specialisations for Computer Science Engineers. Using Agile approaches, designed many software solutions to drive continuous improvement in processes, systems, workflow, and customer response. On hundreds of application development projects, I've worked as a project manager, client coordinator, lead developer, and/or team member.

Jaiyesh Chahar
Data Scientist & Founder Petroleum from Scratch

Jaiyesh is a highly qualified and skilled Data Scientist with very good experience in Engineering Mathematics - Univariate and Multivariate Calculus, Reservoir Engineering, Production Engineering, Numerical Simulations, Oil and Gas Physics Statistics, Linear Algebra (Intuitive to Applied), ML-Algorithms, Deep Learning, Time Series Analysis, Predictive Maintenance, and Predictive Analysis.

Ishan graduated from the Indian Institute of Technology in Dhanbad with a degree in petroleum engineering. With an MBA from Indian School of Business, Hyderabad, he has also added a business management dimension to his resume. Ishan has close to 12 years of experience as a Production Technology/Engineer in the Upstream sector of the Oil & Gas Industry and domain expertise. He has a strong background in petroleum fiscal and economics, as well as digital in upstream production.

Ishan Appu
Data Science Expert, Production Engineer

Previous Feedback From Trainee

Mansour Khosravi
(Petroleum Geologist, Illinois State Geological Survey)

I've participated in two training courses that conducted by Edvantage, both were very informative training and honestly, I learnt a lot. Both instructors knowledgeable and get ready to answer any questions related to their courses. The instructor for sequence stratigraphy course always articulates the details of the topic into understandable information that could be retained for everyone. Python class was very informative, and I recommend this type of class for those students willing to learn from scratch. the instructor expertise in programming and machine learning makes him a very high-level instructor and able him to answer all of the questions brought up in class very fast.

Abhishek Kumar Singh
(Pass out 2020, Petroleum engineering DIT University, Dehradun)

My major motivation for enrolling in this programme was to improve my technical knowledge of my field, and this course presented me with the ideal chance to improve my abilities and gain a better understanding of data analysis and machine learning. The webinar concentrated on the industrial side, which was quite beneficial. Even the most difficult aspects were made simple for us by the instructor. Nitish's role as course organiser and outstanding guide added to the course's value. The course was well-designed and executed in general. As the programme organiser delivering their finest prospects enrolled, I would definitely suggest this course to everyone. The management team was excellent and was always willing and able to assist the students in any manner imaginable.

Pratilipi Beura
(MSc 1st Year, Applied Geology & Geoinformatics, NIT, Durgapur)

The main motive of me joining this training was to improvise my knowledge on the technical part of my subject and this course provided me with the exact opportunity to enhance my skills and understand Data analysis and Machine learning. The webinar focused on the industrial part which was really helpful. The instructor made it very easy to make us understand even the complicated parts. Nitish being the coordinator was an additional benefit to the course as an excellent guide. Overall, the course was very well designed and executed. I would surely recommend this course to everyone as the program organisers are delivering their best to the candidates enrolled. The management team was very good was always ready and able to help the students in every possible way.

Hussein Aboud Hassan

(Geology & geophysics, international university of Africa)

My name is Hussein Aboud Hassan. I am a student in international university of Africa. I am studying Geology and geophysics and I am in last year. I took this course because I knew first it relate with what we learn so I decided to increase my knowledge. Thank God the course went well, and I appreciate the work that has been done by EDvantage to help us widening our knowledge in the field of Geology. I hope i can join more courses in the future, I also hope it will be even better.

Irfan Sunny

(M.Tech Petroleum Engineering student, Dibrugarh University)

The machine learning course was an excellent course provided by EDvantage. As far as I am concerned, the course was interactive and knowledgeable and specific to oil and gas industry. I had a great time learning machine learning as the instructor was very cooperative and approachable. Everything related to application of machine learning in oil and gas industry was taught by the instructor. I would recommend everyone to take the course. The instructor explains everything in detail and in a very simpler way which made every session interesting and likable.

Kashan Ahmed Khan

(B-Tech 4th year Petroleum Engineering, RGIPT, Jais Amethi, U.P)

The course was well structured and to the point. My main aim of joining this project was to understand Data Analysis of well logs and the instructor made it very easy to understand and went through all the concepts thoroughly. I would surely recommend this course to my fellow colleagues. The management team was also very good was always ready and able to solve the problems faced by students.

Frequently Asked Questions

○ **There are lot of programs on data science why to join your program?**
There are lot of platform who teach data science but we are the only institute who provide certified application based data science training in Oil & Gas.

○ **I don't have prior coding? So can I join this program?**
No worries we will start it from scratch. You don't need any prior experience.

○ **Will it be helpful for me if I Join this program as I have good knowledge of Python?**
Well good this can help you to understand the data science concepts behind oil and gas application easily. You will get different data sets for practice and analysis.

○ **What's the fee for the program?**
INR 22500 or 300 dollars

○ **Will I get a certificate?**
Yes you will get 3 months certificate from Persian Gulf University after the completion of the program.

○ **What will be the timing?**
Classes will be on evening probably 5 hours at weekends.

○ **What if I miss classes?**
No worries we'll provide you recorded video along with necessary material.

○ **Will there be an assignment?**
Yes, we'll have assignment on weekly basis and final project at end of the program.

○ **Who can join this course?**
Undergraduate/Graduate or professional working in energy sector.

○ **When the program will start?**
Program is likely to start from 16th of April 2022

TIMELINE

Week Number	Dates	Class Timings
Week 1	4/16/2022	
	4/17/2022	
Week 2	4/23/2022	
	4/24/2022	
Week 3	4/30/2022	
	5/1/2022	
Week 4	5/7/2022	
	5/8/2022	
Week 5	5/14/2022	
	5/15/2022	
Week 6	5/21/2022	Saturday & Sunday **Start Time:-** 10:30 AM IST or 5 AM GMT **(5 Hours/Week)**
	5/22/2022	
Week 7	5/28/2022	
	5/29/2022	
Week 8	6/4/2022	
	6/5/2022	
Week 9	6/11/2022	
	6/12/2022	
Week 10	6/18/2022	
	6/19/2022	
Week 11	6/25/2022	
	6/26/2022	
Week 12	7/3/2022	
	7/4/2022	