Analytics For Oil & Gas

Covers entire from scratch to applications in different petroleum disciplines

(Edvantage Learning in Collaboration with Petroleum From Scratch)
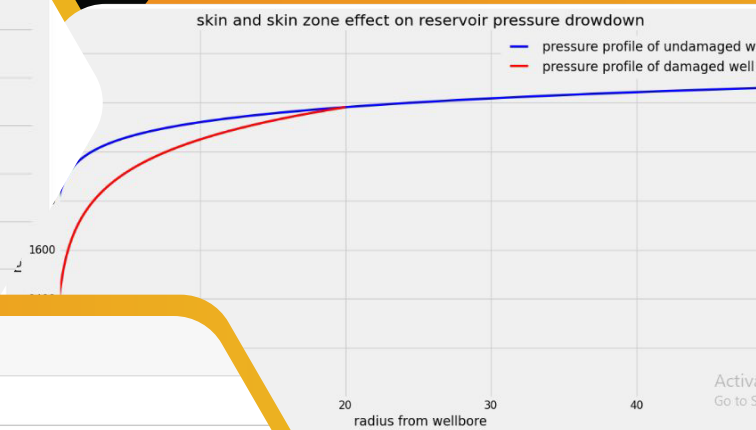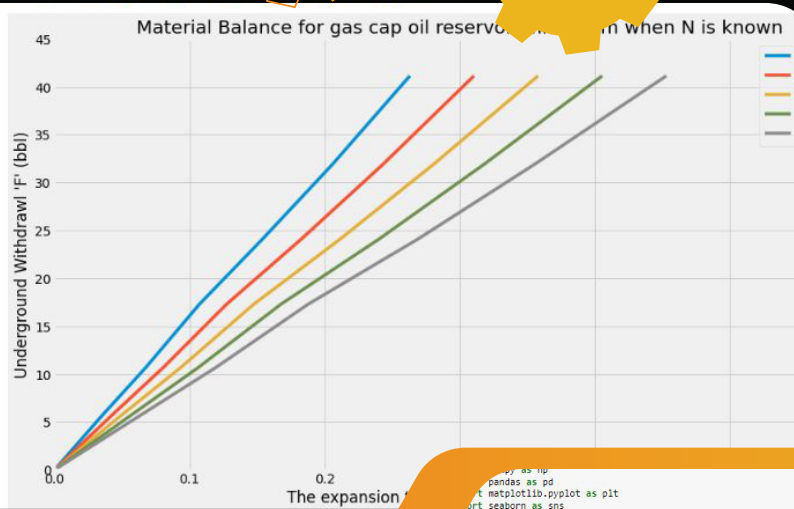
ED VANTAGE LEARNING

PETROLEUM FROM SCRATCH

Duration: 6 Weeks

Discounted Offer:

Valid Upto 10th February

APPLY NOW

- **Python Fundamentals using Oil & Gas**
- **Analytics for Oil & GAS**
- **Analytics projects for different petroleum disciplines**
- **Time Series for Oil & Gas**
- **Oil & Gas Predictions & Forecasting**

Material Balance for gas cap oil reservoir when N is known

m =
m = 0
m = 0.5
m = 0.6
m = 0.7

Underground Withdrawl 'F' (bbl)

45
40
35
30
25
20
15
10
5
0

0.0   0.1   0.2

The expansion

skin and skin zone effect on reservoir pressure drowdown

pressure profile of undamaged w
pressure profile of damaged well

1600

20   30   40

radius from wellbore

```
py as np
pandas as pd
t matplotlib.pyplot as plt
rt seaborn as sns
om ipywidgets import interactive
```

Klinkenberg's effect

$$k_g = k_L + c \left[\frac{1}{p_m} \right]$$
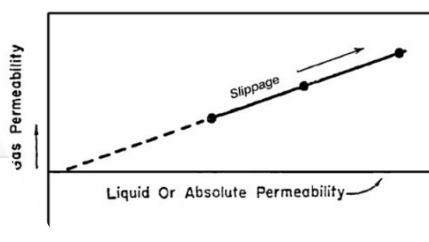
jupyter   MP (Pressure Profiling) Last Checkpoint: 14 hours ago (autosaved,

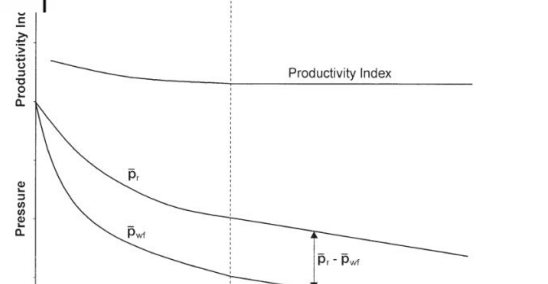File   Edit   View   Insert   Cell   Kernel   Widgets   Help

Code

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from ipywidgets import interactive
```

Pressure Profiling

Gas Permeability

Slippage

Liquid Or Absolute Permeability

Direction of Flow

osaved)

Help

Trusted   Python 3 (ipykernel)

Code

reservoir

Productivity Index

Productivity In

Pressure

$\bar{p}_r$

$\bar{p}_{wf}$

$\bar{p}_r - \bar{p}_{wf}$

Python Fundamental
Using Oil & Gas 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 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

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

Data Analytics for Oil & Gas

- **Effective computations with Numpy:**
  - Numpy Introduction
  - Numpy Arrays
  - Arrays Dimension and Shape
  - Arange and Linspace
  - Zeroes, Ones, and Identity
  - Array Indexing
  - Array Slicing Arrays
  - Indexing Higher Dimensional Arrays
  - Application of array slicing in Machine Learning
  - Array Reshape
  - Data Distributions
  - Random Number Generation
  - Numpy Functions

- **Data Manipulation with Pandas:** Dataframe, csv, excel etc.

- **Plotting and Visualization with matplotlib**

- **Oil and Gas Projects**

- **Brief introduction of Jupiter Notebook and python programming**

- **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**

- **Introduction of data analytics application in upstream**

- **Easily create high-quality visualisation of petroleum problems**

Languaues & Tools
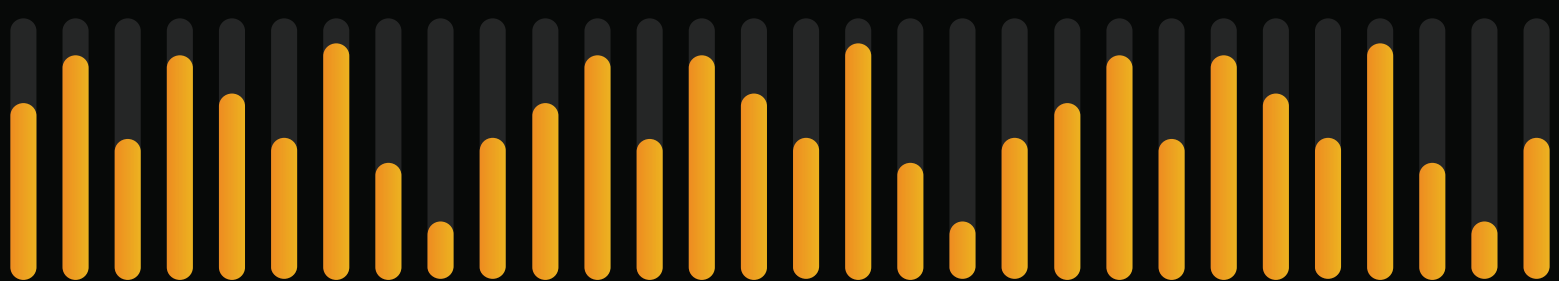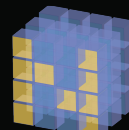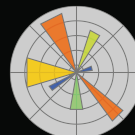
Time Series in Oil & Gas

◆ Introduction to time series data, and how it is different from normal data. We are already doing forecasting in our real life

◆ Mathematics and Statistics relevant to forecasting
   a. Lag features
   b. Algebra, Calculus
   c. Outlier Removal

◆ Terminology of time series

   a. Ts objects
   b. Time plots
   c. Seasonality
   d. Periodicity
   e. Trend
   f. White Noise
   g. Unit root
   h. Smoothening

Data Analytics Research Projects

○ Comparison between Vogel's and Fetkovich's Model for IPR

○ Future IPR

○ MBAL Oil

○ The Klinkenberg Effect

○ Well Test

○ Effect of Skin on Bottom Hole Pressure

○ Gas Material Balance

○ Spinner Log Analysis

○ Vogel's IPR

○ 1D Pressure Diffusion Numerical Solution

Trainee Custom Projects
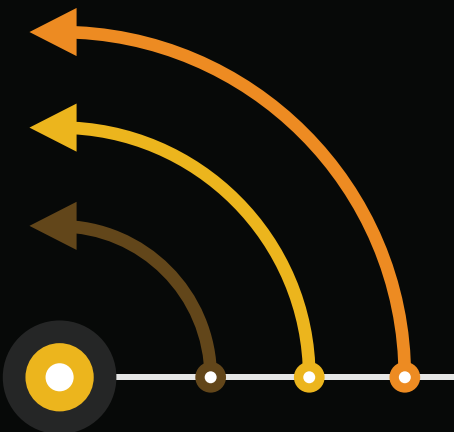
Feedback From Trainees

Ayush Gandhi
B. TECH (Petroleum Engineering) Pandit Deendayal Energy University

I, Ayush Gandhi, would like to provide feedback on the "Data Science and Its Application in Oil and Gas" course. The team of "Edvantage" approached the course. It has been a wonderful course thus far, and it will continue to be so throughout the journey. The training is focused on oil and gas and is very practical. If somebody wants to start their career in data science in the oil and gas industry, I would recommend this course. To provide aid, the entire team assists and coordinates. They also provide interview support, which indirectly aids in the customization of the CV. The entire staff is enthusiastic about assisting with the project.

Anas Babai
Geoscience Lecturer in University of Bahri & +3 working experience in oil Industry & Ph.D. scholar

My Name is Anas Babai I would like to share my feedback on the course" Data Science and its applications on oil and gas", I was looking toward such course since it matches my career orienta tion. The course content was designed to cover almost most aspects of data science, and the way things were explained was very simple making it easy to understand even for those who don't have data science experience, starting form covering most used Python libraries, SQL database and projects. I believe this course will put anyone in the right track toward mastering data science and ML. I highly recommend this course to everyone. My deepest gratitude to Edvantage for organizing this course.

Muhammad Yunus

Hello! I am Muhammad Yunus from Indonesia. Joining in "Data Science and Its Application in Oil and Gas" is a great choice for me as a person who want to be professional in data science. All the instructors are friendly and smart. They know well how to stimulate a comprehensive understanding to the entire audiences and deliver it in easy way to be understood even for people who have a different background and zero experience in data science application. In addition, every class is full filled by many practical things so that the new knowledge is directly applicated. Thanks!
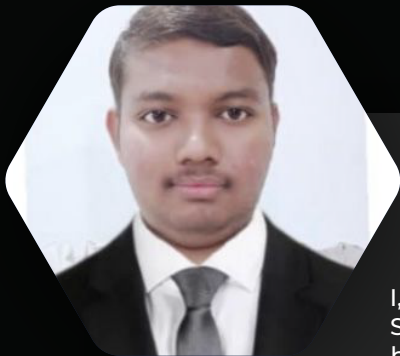
Sahil Vora
B. TECH (Petroleum Engineering) Pandit Deendayal Energy University

I, Sahil Vora, would like to share feedback on the course "DATA SCIENCE AND ITS APPLICATION IN OIL AND GAS". Overall, the course has been very comprehensive and easy to understand so far. The instructors made sure that they are giving the information in a way that won't make me confused. This course is designed such a way that we can do hands-on practice of data science project using python. I loved this course; it was very objective and direct. I'm sure it will be very useful in my life as a student and as a professional. Thank you so much for this great course.

M Faiz Nurrohman

Hi, my name M Faiz Nurrohman, i would like to share feedback on the course "Data Science and Its Application in Oil and Gas". Overall, the explanation from the speaker is very easy to understand. And in this course, we can ask questions if we still don't under stand the material given. We are also given questions to test our abilities so that we can implement the material that has been given. And I'm sure this course will be useful for me in the future.

Fakhrur Novianto
Bachelor of Engineering - BE, Teknik Geology/Geophysical, Universitas Pembangunan Nasional Veteran Yogyakarta.

Hi, I'm Fakhrur Novianto, would like to share feedback on the course "DATA SCIENCE AND ITS APPLICATION IN OIL AND GAS". The lessons delivered are very clear and easy to understand for me, besides that the teacher provides interesting case studies in the application of the formulas used in data analysis. The instruc tor always asks us about the participants' understanding of each material presented, which is good so that participants can relate and apply it to more complex issues. Interactive learning is very helpful for us in solving problems in writing program code. Assignments given to participants make participants more sensitive and accustomed to practicing what they have learned, and the opportunity to ask questions about the assignments given in the fol lowing week is a good thing so that participants can confirm their understanding of the tasks given. Thank you.

○ **Why should I join your data science programme when there are so many others?**
There are other platforms that teach data science, but we are the only institute that offers accredited application-based data science training in the oil and gas industry.

○ **What if I don't have any prior coding experience? Can I still join this course?**
Don't worry, we'll start from scratch. There is no requirement for prior experience.

○ **Will joining this program be beneficial to me because I am proficient in Python?**
This might help you readily comprehend the data science ideas underpinning oil and gas applications. You will receive many data sets for practise and analysis.

○ **What's the fee for the program?**
INR 15000 or 200 USD (valid only upto 10th February)

○ **Will I get a certificate?**
Yes, you will receive a 6-week training certificate upon completion of the programme.

○ **What if I miss classes?**
We will provide you the recorded lectures as well as the relevant materials.

○ **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?**
Commencing Soon