PEA

PETROLEUM ENGINEERS ASSOCIATION

2 MONTHS LONG CERTIFIED TRAINING ON

PYTHON FOR OIL AND GAS

python™

MR. NASHAT JUMAAH

11+ YEARS EXPERIENCE IN OIL AND GAS INDUSTRY

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ABOUT THIS TRAINING COURSE:

- Designed for Absolute Beginners.
- Python for oil and gas course will provide oil and gas personnel (engineers, specialist, geologist etc.) with the required knowledge to create solution and workflows to already existing problems in oil and gas industry utilizing the power of python and its amazing libraries.
- Many libraries are covered in the training in Python (Pandas, Plotly, Matplotlib, Lasio, Fluids, thermo, streamlit, gradio, pyfas,NetworkX)
- This Training covers wide range industry challenges through python coding ranging from reservoir engineering to operations
- More than 10 projects, with assignments for the trainees.
- Examples with code and data are handed to the students from day 1.
- Main Covered Topics (Reservoir Engineering, Production Engineering, Drilling and Workover, Operations, Fluid Properties)
- Get introduced to Machine Learning.
- By end of the course participants will have an excellent knowledge of python applications in oil and gas industry.

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SKILLS AND BENEFITS YOU WILL ACQUIRE.

- Master the basics of python.
- Learn how to visualize data in python
- Create Clean and organized code.
- Use python libraries to code for various problems encountered in the industry.
- Learn how to deal with List, Tuple, Dictionaries, Data frames and other data types.
- Apply various aspects of oil and gas calculation into python.
- Create monitoring KPIs dashboards.
- Convert your problems into solution.

WHAT YOU GET:

- Video Recordings on daily basis.
- Study materials pdf.
- Sample code files.
- Companion data for the codes to work
- All the examples' codes, data and with comments.

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PRE REQUISITE:

- Zero Python Knowledge.
- Basic knowledge of oil and gas industry is beneficial.
- A working laptop.

WHO CAN ATTEND:

- Reservoir Engineers.
- Production engineers.
- Chemical engineers.
- Drilling engineers.
- Geologists and petrophysics
- AL and workover engineers.
- Undergraduate students.

DURATION:

8 WEEK LONG (16 LECTURES | 2 HOUR PER LECTURE)

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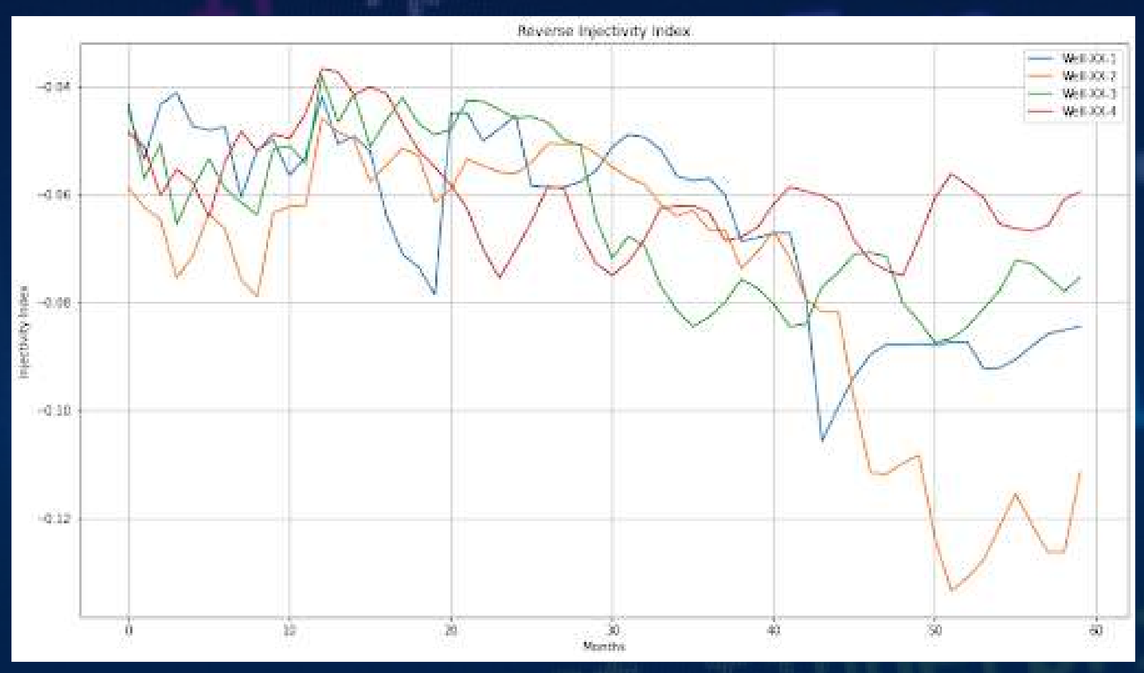
MODULE 1: (DAY: 1 & 2)

- Installing AnacondaPython Package
- Introduction To Anaconda Software Packs
- Introduction to Python Eco System
- Why Python?
- Basics expressions in python



- Variables and Data Types
- Sequences in Python (List, tuple, Set, Dictionary)
- Simple Plot with Matplotlib
- Inflow Performance Example

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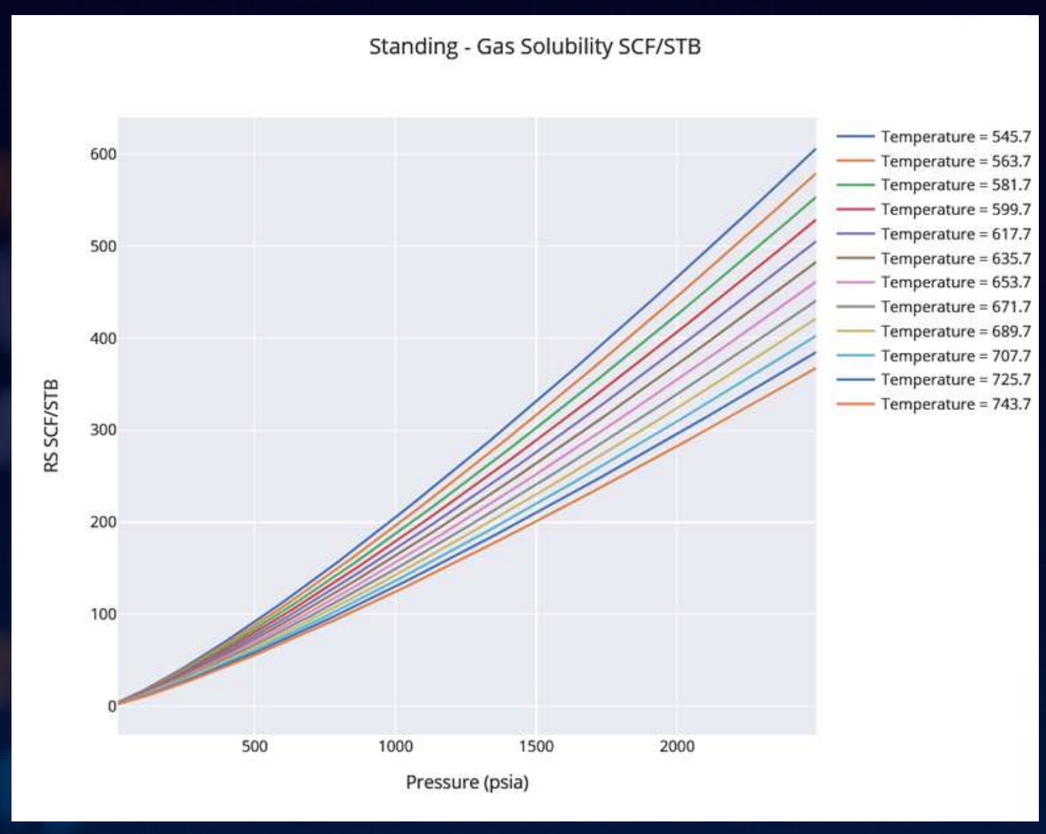
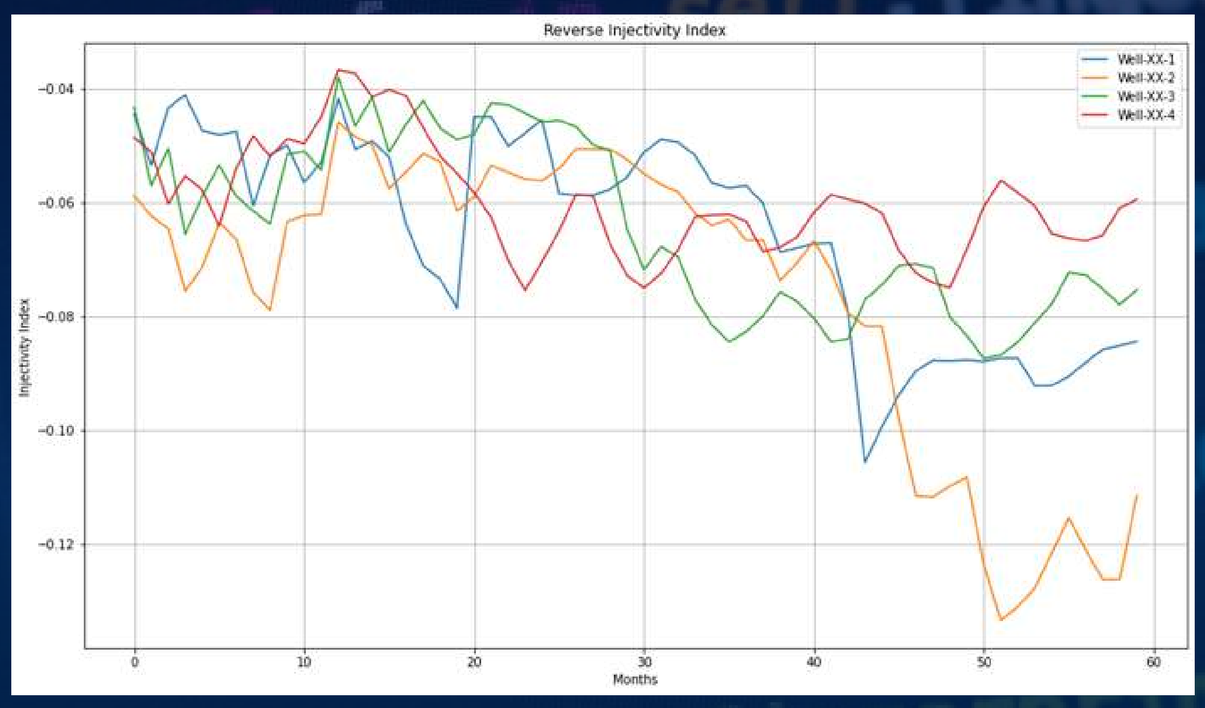
MODULE 2 (DAY: 3 & 4)

- More on Sequences.
- Programming Loops (For and While)
- Integrated If statements and loops(Including break, continue)
- Introduction to Python Function(def keyword)





- An Example on Recovery Factor (Guthrie Corr.)
- A PVT Example
- Exporting Plots
- Export Calculation results to Excel

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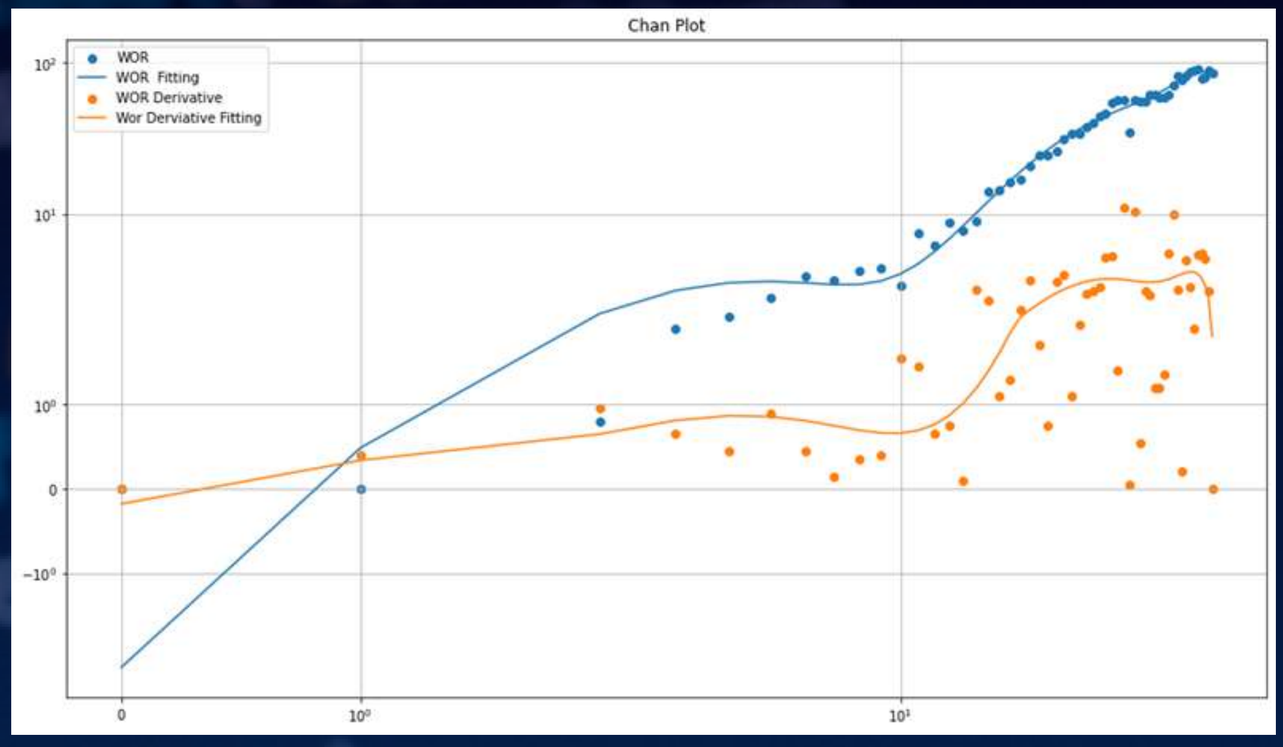
MODULE 3 (DAY: 5 & 6)

- Introduction to Pandas
- Reading Tabulated Data
- Reading Excel Sheets
- Historical Data Plotting
- Introduction to JupyterLab
- Plotting with Plotly Express
- Liquid Loading (Turner's Rate) Example
- Chan Plot Diagnostic (with Polynomial Regression)
- Polynomial fitting using Numpy
- Basic matplotlib figure configurations



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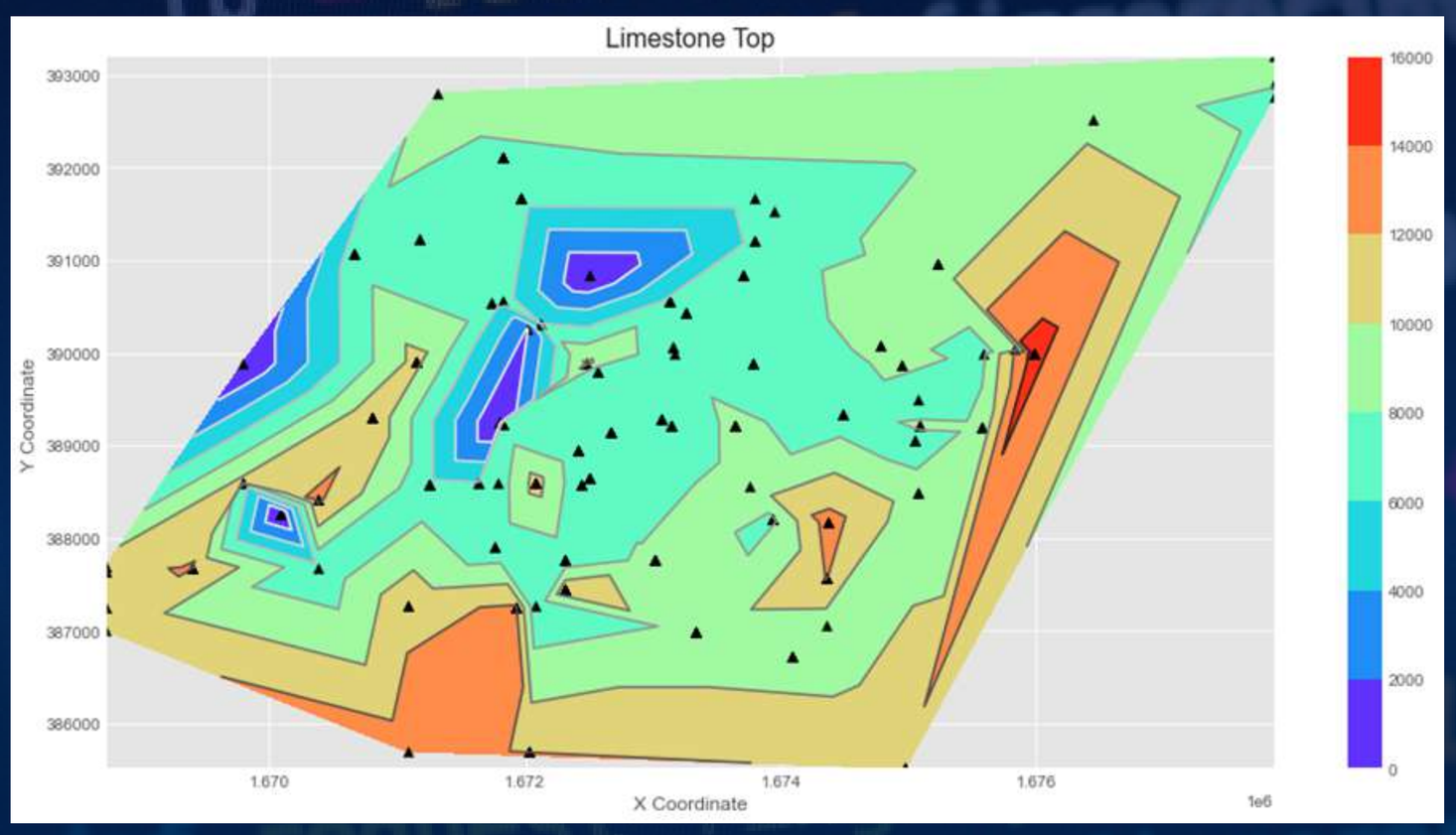
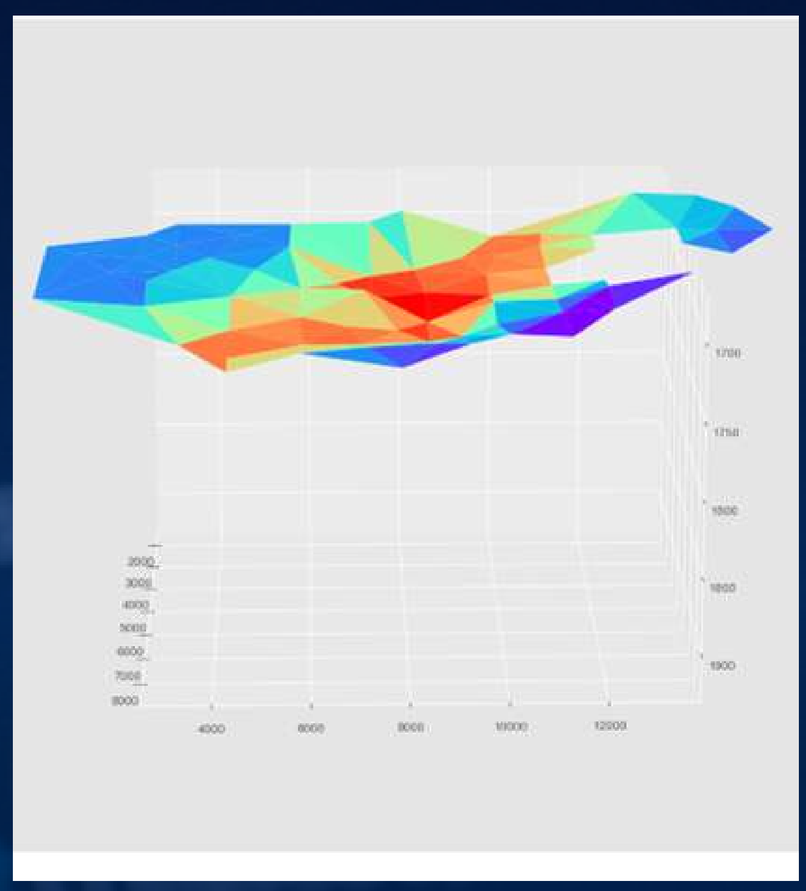
MODULE 4 (DAY: 7 & 8)

- Introduction to matplotlib 2D Surface mapping
- Contour Plots and it’s variants in Python
- Oil Field Formation Depth Mapping Example
- Water Oil Contact 3D mapping
- Data Averaging using various techniques utilizing Oil Production and WHP
- Working with Las Files and Well logs using Lasio.





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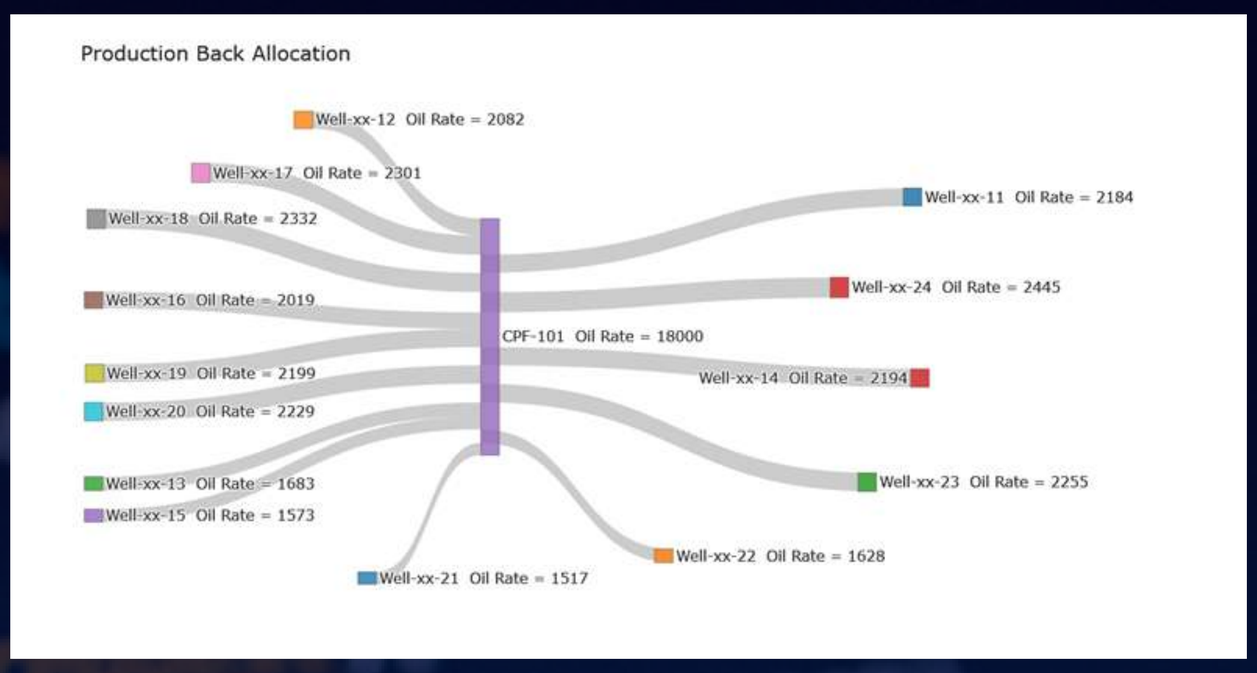
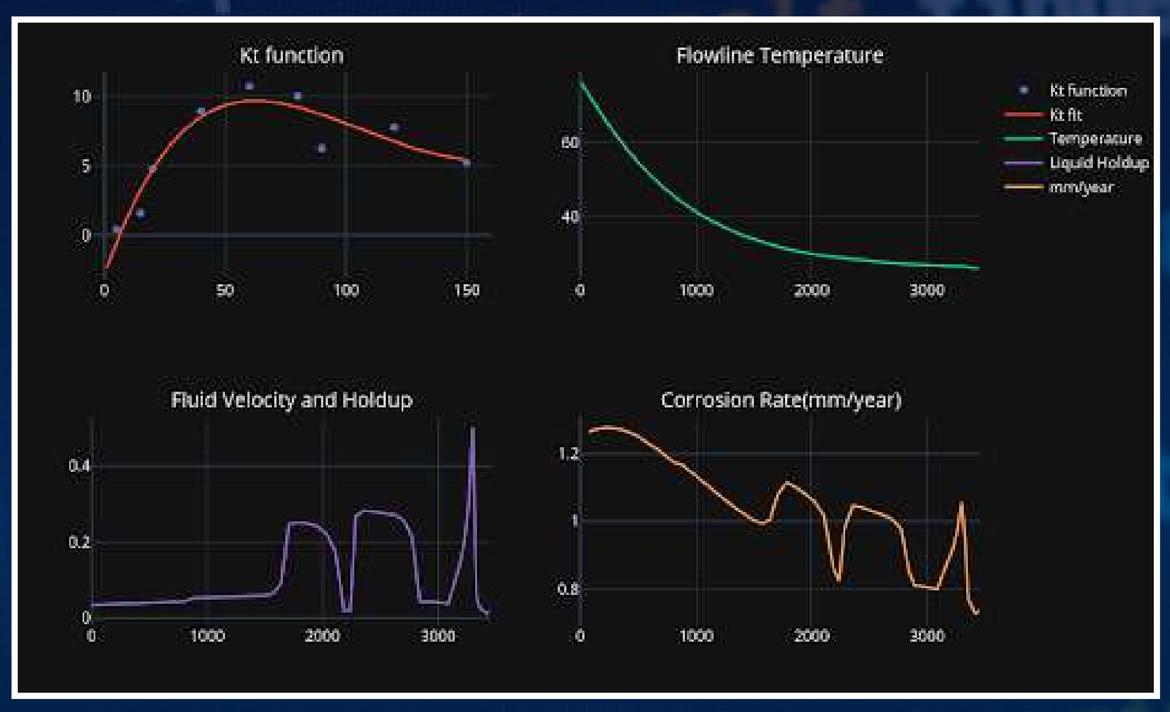
MODULE 5 (DAY : 9, 10)

- Introduction to Plotly configuration
- Plotly Subplots.
  Introduction Sankey Charts.
- An Example of Production Back Allocation





- Creating Well and Separator Networks Visuals.
- Introduction to two-phase multiphase flow package(psapy)
- Prediction of BHP using Beggs and Brill

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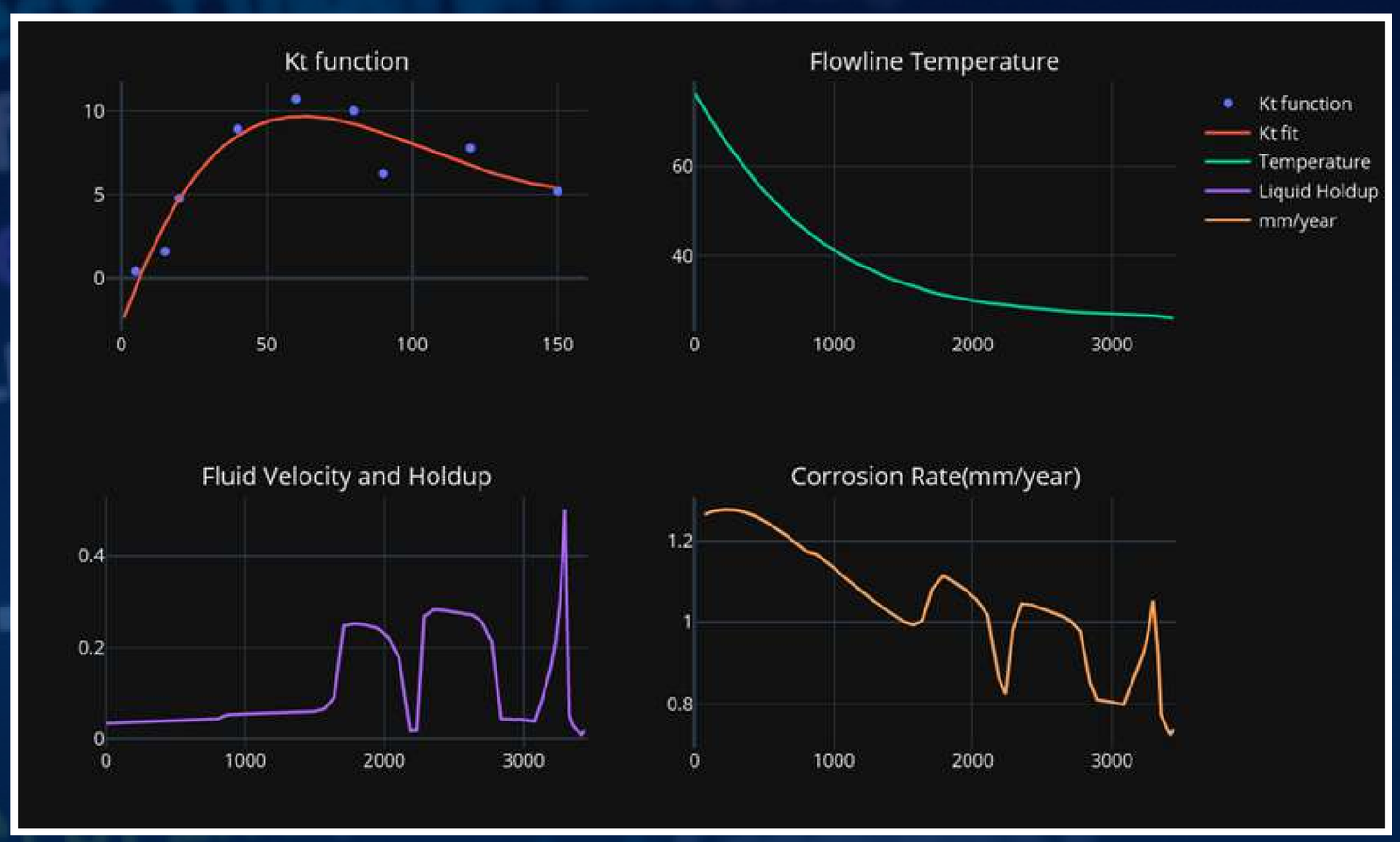
MODULE 6 (DAY : 11 & 12)

- Introduction To Flow mapping using fluids package.
- Multivariate scatter coloring and symbol setup.
- Flow Stability Advisor Example.
- NORSOK M-506 Corrosion Monitoring Example
- Reading OLGA Trend Plots using Pyfas
- Introduction to Dashboarding.
- Working With Streamlit



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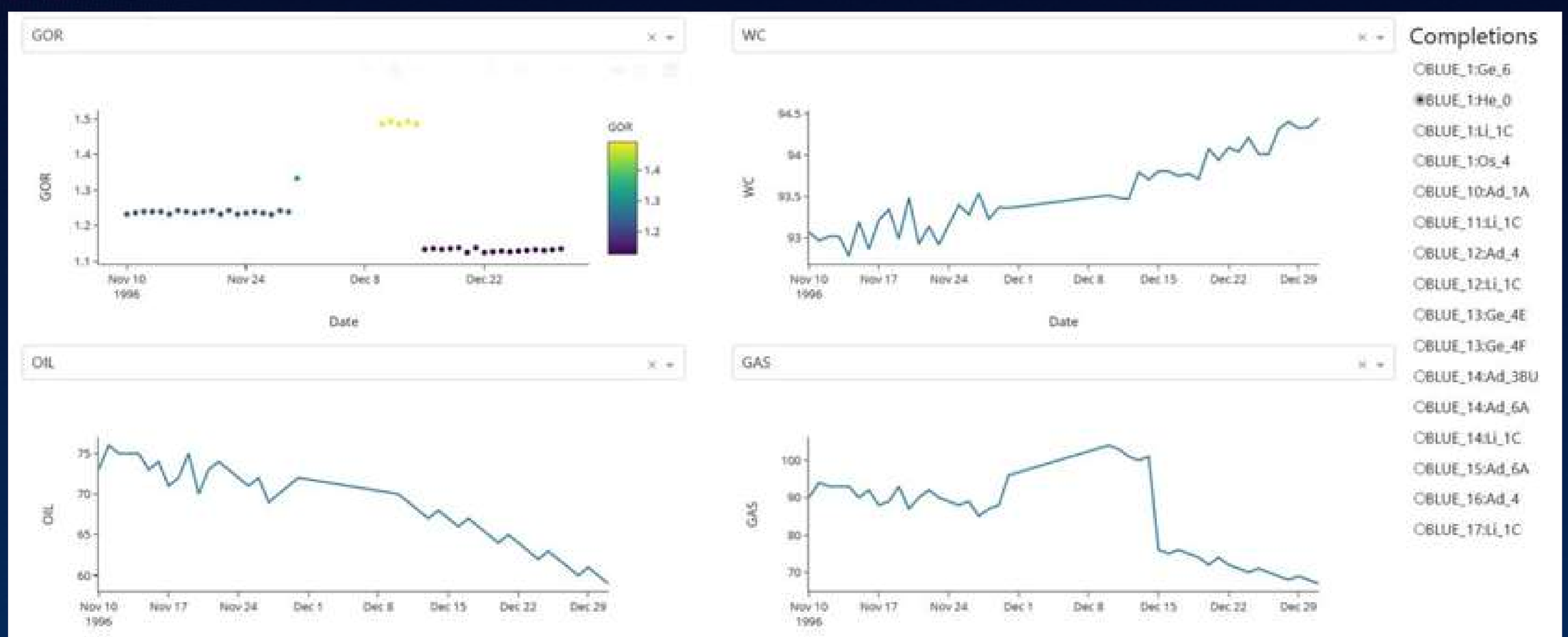
MODULE (DAY 7: 13 &14)

- Creating Nodal Analysis Dashboard
- Historical Production Data Dashboard
- Recreating a PVT calculator using Dashbaords
- Working with DCA (Simple time-rate solution)



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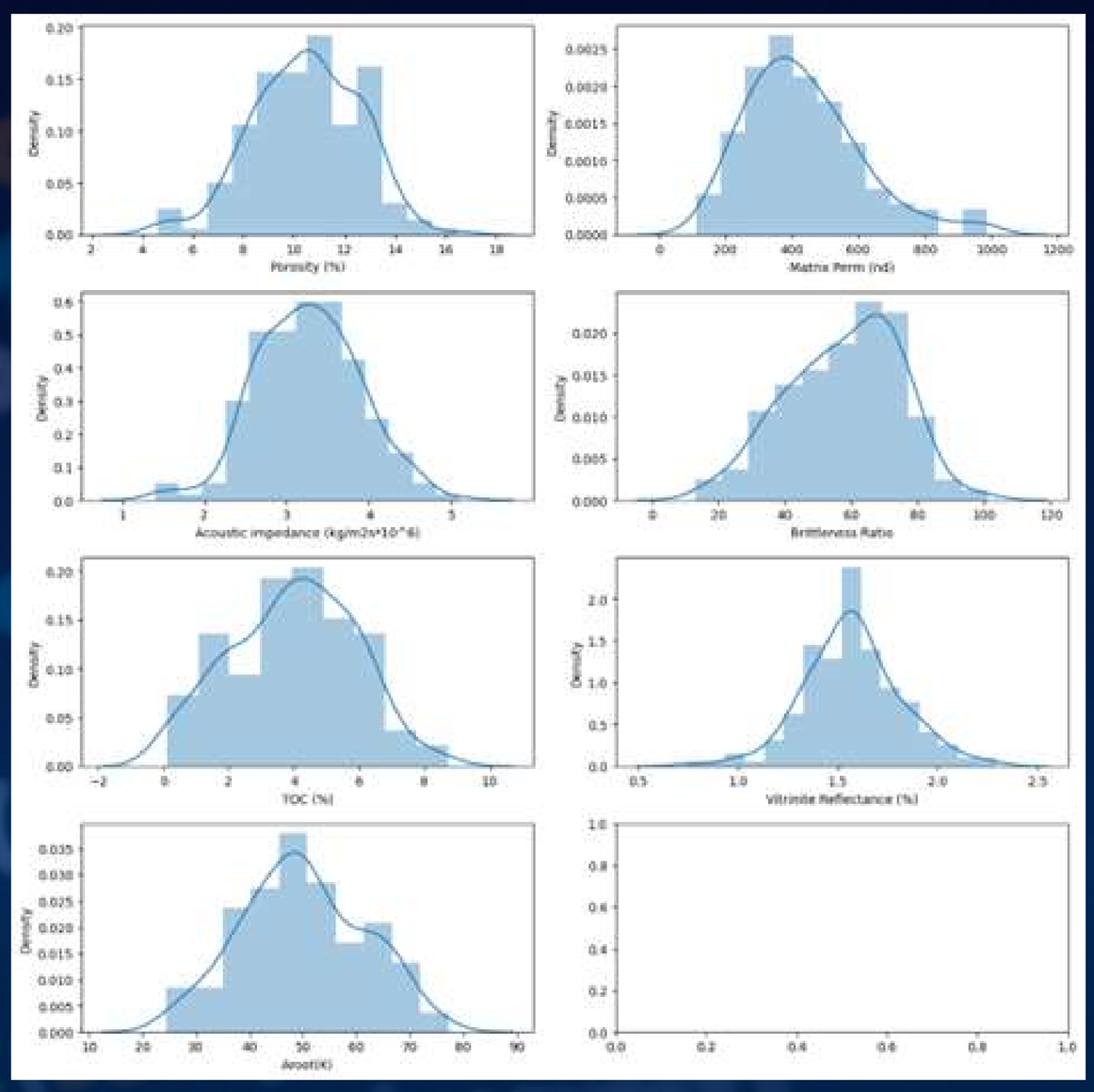
MODULE 8 (DAY: 15 & 16)

- Introduction to Objected Oriented Python
- Producing Clean Code.
- Tips and Tricks for code maintenance and refactoring
- Introduction to Machine Learning
- Data Shaping and Normalization
- Training Testing Split.
- Regressions and Output prediction.
- Classification problems with Machine Learning.
- Creating Production prediction using ML
- Multivariate regression.



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