

Python for Statistical Analysis

Workshop I

16th April 2026
9.00 AM – 5.00 PM

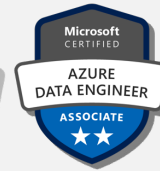
MRTB1123

APPLIED STATISTICS FOR BUSINESS INTELLIGENCE

Presenter



Mohammed Arif
GenAI Architect
Big Data | Machine Learning | AI

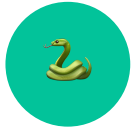


Mohammed Arif has more than eighteen (18) years of working experience in Information Communication and Technology (ICT) industry. The highlights of his career are more than seven (7) years of holding various senior management and/or C-Level and had five (5) years of international ICT consultancy exposure in various countries (APAC and Australia), specially on Big Data, Data Engineering, Machine Learning and AI arena.

He is also Certified Trainer for Microsoft & Cloudera.



What You'll Learn Today



Python Fundamentals

Write code, work with data, automate tasks



Descriptive Statistics

Calculate averages, understand distributions, visualize data



Data Analysis with Pandas

Load, explore, filter, and transform datasets



Hypothesis Testing

Run statistical tests, interpret p-values, draw conclusions

Today's Schedule



Setup & Introduction



Module 1: Python Fundamentals



Morning Break



Module 2: Data Wrangling with Pandas



Lunch Break



Case Study Part 1: Descriptive Statistics



Afternoon Break



Case Study Part 2: Hypothesis Testing

Workshop Resources

 Resource URL

<https://arif.works/utmstat/>



MRTB 1123 - Applied Statistics for Business Intelligence
by Dr Nurulhuda Firdaus Mohd Azmi & Dr Ahmad Firdaus Yosman

Week 2 and Week 3 – Course Materials



C. N. Knaflic, [*Storytelling with Data*](#). Hoboken, NJ, USA: Wiley, 2015.

A data analytics and visualization guide for Business Professional

Tips for Success Today



Hands-On Learning

Type or copy-paste every code example. Doing beats reading every time.



Complete Checkpoints

Don't skip the practice exercises. They build your confidence step by step.



Ask Questions

No question is too simple. If you're confused, others probably are too.



Take Notes

Jot down "aha!" moments and tricks. Your future self will thank you.



Errors Are Normal

Everyone gets errors - even experienced programmers. They're learning opportunities.



Focus on Understanding

Don't memorize code. Understand the logic. You can always look up syntax later.

Python Fundamentals

Build Your Python Foundation

1

Variables

Store numbers, text, and data in labeled containers

2

Lists

Work with multiple values at once

3

Loops

Automate repetitive tasks — write once, run many times

4

Functions

Create reusable code blocks that solve specific problems



Hands-on Practice: You'll complete 9 exercises to build confidence

Data Wrangling with Pandas

The Essential 5 Commands — Your Daily Tools

```
.head()
```

```
.shape
```

```
.info()
```

```
.describe()
```

```
.isnull().sum()  
)
```

What You'll Master

- ✓ Load data from CSV, Excel, and online sources
- ✓ Explore datasets to understand structure and quality
- ✓ Select specific columns and filter rows by conditions
- ✓ Group data by categories and calculate statistics
- ✓ Create professional visualizations (histograms, box plots, scatter plots)

Descriptive Statistics Case Study

Real Data, Real Questions: The Titanic Dataset

891 passengers • Age, gender, class, fare, survival outcome

Questions We'll Answer Together



What does the age distribution look like?

Learn: Distribution Analysis



What was the typical survival rate?

Learn: Central Tendency



How much did ticket prices vary?

Learn: Variability & Spread

You'll use: Python • Pandas • Seaborn for visualizations

Hypothesis Testing Case Study

From Observation to Proof

Learn to test whether patterns are statistically significant or just random chance

Four Tests You'll Learn

1

Independent t-test

Compare 2 groups (e.g., male vs female ages)
→ *Is there an age difference by gender?*

2

Mann-Whitney U test

Compare 2 groups when data is skewed
→ *Did survivors pay different fares?*

3

Chi-Square test

Find associations between categories
→ *Is survival related to passenger class?*

4

Binomial test

Test proportions and percentages
→ *Was "women & children first" policy real?*

Thank you

All

Big thanks to

DR. AHMAD FIRDAUS YOSMAN