TECHNICAL EDUCATION ACADEMY

Operational Risk Management Center

COURSE PROGRAMME

000491

HSSE074 - HSE Data Science and Analytics

Safety enhancement is the priority of every organization.



Learn from the Best in the Business!

Course overview

Duration: 3 days / 24 hours · Intermediate level

Why take this course

Safety enhancement is the priority of every organization. Annually millions of dollars are spent to develop procedures and practices to diminish the health, safety and environmental disasters. Monitoring incidents and hazards and performing timely analysis leads to effective remediation efforts. In oil and gas upstream industry, a thorough understanding of HSE data and intelligent data analytics is essential to improve safety and particularly to reduce injuries and fatalities. Most of the conventional HSE management and hazard identification systems are incapable of agile and automated data integration and smart decision making. Furthermore, HSE incident database is often too intricate to comprehend, and its analysis is solely dependent on personal skills of individuals. In order to extract explanatory features' relationship and intelligently make execution strategies, a big data analytics platform is developed.

As businesses are profit-making entities it can be beneficial to promote the cost-saving and productivity benefits of good safety management. For many, this is where predictive analytics comes in. This method of data analysis can be used to predict future outcomes of a wide variety of business activities.

What are the benefits of predictive analytics? Putting forward the right business case for predictive analytics will increase the rate of adoption and make it easier to justify when used in health and safety. Predictive analytics use has benefits for many different areas within workplace management.

Reducing risk is a core function in large businesses both in terms of managing health and safety and the long-term sustainability of the company. The adoption of predictive analytics has already taken place heavily in the field of finance and insurance with the oil and gas industry stepping up their adoption in an attempt to reduce workplace incidents and increase their profitability.

One of the costs of running a business with a reliance on heavy machinery is the monitoring and maintenance of the equipment. As machines become more intelligent with increased recording capabilities, predictive analytics will be able to be increasingly integrated, reducing the amount of human monitoring that needs to take place. This will reduce the contact between the worker and the machine reducing the risk of injury. Additionally, time will also be saved through the fewer human hours that will be needed to monitor and maintain equipment.

Who it is for and how it helps

This training course has been designed for professionals whose jobs involve in the manipulation, representation, interpretation and/or analysis of data.

What you will learn

- Identify data properties and detect potential issues; address data problems such as sampling bias, missing values, and excessively small or large samples

Course overview — continued

- Conduct time series analysis and choice analysis
- Determine causal effects using potential outcomes
- Implement causal analysis methods (matching, instrumental variables, regression discontinuity, difference-in-differences, fixed effects). Identify the causal assumptions required for each type of statistical method
- Express assumptions using causal graphs

Curriculum

Modules 01–04

01 Data Analysis Overview

- What is data analysis, and why is it important?
- Applications of data analysis
- Data analysis applications in HSE
- Stages of data analysis
- Types of data and measurements
- Four approaches to data analysis

02 Data Loading

- Data sources in Power BI Desktop
- Database sources
- Connecting to a data source
- Importing Excel files into Power BI Desktop

03 Data Processing and Transformation

- Power Query
- Pivot, transposing, and grouping data
- Merging tables
- Joining tables
- Joining tables
- Data modeling
- Keys

04 Data Analysis Expression

- Overview
- Most commonly used DAX functions
- Measures and calculated columns
- Use cases
- Quick measure
- Introduction to Statistical Analysis
- Box plot

Curriculum

Modules 04–06 · Module 04 — continued

- Outliers
- Data distribution
- Distribution shape
- Mean, median, mode, and range
- Standard deviation and variance
- Parameter scaling
- Normalization and standardization
- Pros and cons
- Correlation
- Linear regression
- Correlation in Power BI

05 Visualization

- Line plot
- Hierarchy
- Drill down
- Filters
- Slicers
- Pie/donut charts
- Tree map
- Matrix/table
- Maps
- Word cloud
- Scatter plot
- Funnel chart
- Gauge chart
- Q&A

06 Optimization

- Accessibility
- Color blindness and vision
- Shape perception

Curriculum

Module 06 — continued

- Best practices for dashboards
- Number of charts per page
- Information on each chart

Programme instructor



Samir Aliyev

Samir is a seasoned HSE professional with over 20 years of experience working in the oil and gas industry, encompassing service and operator roles. He holds a Master of Science in Risk and Safety Management from a prestigious British university, as well as a Post Graduate Diploma in Occupational Health. Samir has spent 11 years in leadership positions, demonstrating his strong management capabilities.

With a diverse background in HSE, Samir has expertise in environmental management, occupational health, safety, process safety, control of work, and risk management. He possesses extensive emergency response experience, having started as a team leader for an offshore emergency response team and progressing to become a key member of an Incident Management Team.

Samir's deep understanding of risk management is evidenced through his hands-on experience with various risk management tools and active participation in numerous risk assessments. His comprehensive oil and gas experience spans drilling, oil field services, projects, production and processing, and pipeline operations.

As a skilled trainer and coach, Samir has facilitated the professional development of countless team members. He also boasts impressive data analysis and IT skills, including proficiency in Power BI, Python, and SQL.

Participant ratings

Programme evaluation based on participant feedback

Overall programme rating — 4.5 / 5

Clarity of learning objectives	**4.5 / 5**
Confidence in applying knowledge and skills	**4.2 / 5**
Achievement of learning objectives	**4.2 / 5**
Relevance of content to job tasks	**4.2 / 5**
Suitability of difficulty for the level of preparation	**4.2 / 5**
Increase in knowledge	**4.0 / 5**
Skills development	**4.0 / 5**
Willingness to recommend the programme to colleagues	**4.7 / 5**

6 responses

Joining the programme

Contact the Academy and quote course code 000491 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

Discuss your training needs

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