OHS, IoT & Data Analytics Learning Roadmap

Career Integration Summary

This roadmap blends Occupational & Environmental Health and Safety (OHS) with modern data analytics, IoT (Internet of Things), and AI/ML. The goal is to build the ability to use data-driven tools for hazard prediction, environmental monitoring, and workplace safety management. By integrating machine learning, IoT sensors, and cloud computing, you will develop a practical edge as an OHS professional ready to handle digital transformation in health and safety systems.

Learning Phases Overview

Phase	Focus Area	Key Tools / Skills	Expected Outcome
1. Foundation (Weeks 1–4)	Python, Data Cleaning, Excel Integration	Python, Pandas, NumPy, Jupyter	Clean and prepare OHS datasets for analysis
2. IoT & Data Collection (Weeks 5–8)	IoT sensors for temperature, humidity, gas levels	Arduino, Raspberry Pi, AWS IoT Core	Set up real-time workplace environment data feeds
3. Data Analysis & Visualization (Weeks 9–12)	Data modeling and dashboards	Matplotlib, Plotly, Power BI	Generate reports and insights for OHS teams
4. Machine Learning Integration (Weeks 13–16)	Predictive analytics and anomaly detection	Scikit-learn, XGBoost, Prophet, SHAP	Predict injury risk, stress exposure, or air quality
5. Cloud & Automation (Weeks 17–20)	Data pipelines and storage	AWS S3, Lambda, CloudWatch	Automate data upload, alerts, and monitoring
6. Portfolio Development (Weeks 21–24)	Capstone and project deployment	GitHub, Streamlit, Markdown	Create a professional OHS data analytics portfolio

Suggested Project Portfolio

1. **Injury Risk Prediction Model** – Use historical workplace injury data to predict high-risk departments or roles. 2. **Air Quality Forecast Dashboard** – Collect and forecast air pollutant data from IoT sensors. 3. **Heat Stress IoT Monitoring System** – Detect heat stress anomalies using temperature and heart rate sensors.

Recommended Data Sources & Tools

- **Data Sources:** OSHA, WHO Environmental Data, Kaggle OHS Datasets, Simulated IoT data. - **Core Tools:** Python, Pandas, Scikit-learn, AWS IoT Core, Power BI, Plotly, GitHub. - **Output:** Analytical reports, dashboards, and predictive models demonstrating OHS intelligence integration.