



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

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Advanced Data Analytics In Occupational Health Safety (OHS) Training

Duration: 5 days

On-Site

01 Who Should Attend

- This course is ideal for;
- OHS trainers
- Training managers
- Safety managers
- IT professionals
- Instructional designers
- Simulation specialists
- HR professionals
- Supervisors
- Team leaders
- Individuals interested in VR/AR in OHS
- Technology integration specialists
- Organizational development specialists



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02 About the Course

Advanced Data Analytics in OHS: Predictive Modeling and Trend Analysis training empowers professionals to leverage sophisticated analytical techniques for proactive occupational health and safety (OHS) management. This course focuses on utilizing predictive modeling to forecast potential safety hazards and conducting in-depth trend analysis to identify patterns and leading indicators. Participants will learn to apply machine learning algorithms, develop predictive dashboards, and understand the intricacies of time-series analysis and risk forecasting. By mastering advanced data analytics, professionals can enhance safety program effectiveness, anticipate risks, and contribute to a data-driven safety culture that minimizes incidents and improves overall workplace safety.

The increasing reliance on data-driven decision-making necessitates a comprehensive understanding of advanced analytical methodologies within OHS. This course delves into the nuances of statistical modeling, data visualization, and real-time data integration, empowering participants to develop and implement tailored predictive and trend analysis strategies. By integrating advanced analytical skills with OHS expertise, this program enables individuals to lead data-driven safety initiatives that promote proactive risk management and continuous improvement.



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03 Workshop Objectives

- Understand the principles and importance of advanced data analytics in OHS, specifically predictive modeling and trend analysis.
- Implement techniques for collecting, cleaning, and preparing OHS datasets for predictive modeling.
- Understand the role of statistical modeling and machine learning algorithms in predictive OHS analysis.
- Implement techniques for developing and validating predictive models for safety hazards.
- Understand the principles of time-series analysis and forecasting for OHS trend identification.
- Implement techniques for creating interactive dashboards to visualize predictive and trend analyses.
- Understand the role of leading indicators and lagging indicators in OHS trend analysis.
- Implement techniques for integrating real-time data into predictive and trend analysis workflows.
- Understand the legal and ethical considerations related to predictive modeling and trend analysis in OHS.
- Implement techniques for communicating predictive and trend analysis results to stakeholders.
- Understand the challenges and opportunities of implementing advanced analytics in diverse workplaces.
- Understand the role of continuous improvement in predictive modeling and trend analysis practices.
- Develop strategies for utilizing geospatial analysis and spatial data in OHS predictive modeling.

04 Module Topics

Module 1: Foundations of Advanced OHS Data Analytics



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- Principles and importance of predictive modeling and trend analysis in OHS.
- Understanding the relationship between data analytics and proactive safety management.
- Benefits of utilizing advanced analytics for risk forecasting.
- Historical context and evolution of data-driven safety management.

Module 2: Data Collection and Preparation for Predictive Modeling

- Techniques for collecting, cleaning, and preparing OHS datasets for predictive modeling.
- Implementing data quality control and validation methods specific to predictive modeling.
- Utilizing data integration and transformation tools for predictive model inputs.
- Managing data preparation for predictive analysis.

Module 3: Statistical Modeling and Machine Learning Algorithms

- Role of statistical modeling and machine learning algorithms in predictive OHS analysis.
- Understanding regression analysis, decision trees, and neural networks.
- Implementing machine learning algorithms for risk prediction and classification.
- Managing model selection and parameter tuning.

Module 4: Developing and Validating Predictive Models

- Techniques for developing and validating predictive models for safety hazards.
- Implementing model training, testing, and validation procedures.
- Utilizing performance metrics and model evaluation techniques.
- Managing model development and validation.

Module 5: Time-Series Analysis and Forecasting

- Principles of time-series analysis and forecasting for OHS trend identification.
- Understanding moving averages, ARIMA models, and exponential smoothing.
- Implementing time-series decomposition and forecasting techniques.
- Managing time-series analysis.

Module 6: Interactive Dashboards for Visualization



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- Techniques for creating interactive dashboards to visualize predictive and trend analyses.
- Implementing data visualization best practices and tools for predictive insights.
- Utilizing dashboard design and development for real-time monitoring.
- Managing dashboard development.

Module 7: Leading and Lagging Indicators

- Role of leading indicators and lagging indicators in OHS trend analysis.
- Understanding the relationship between leading and lagging indicators.
- Implementing methods for identifying and tracking key indicators.
- Managing indicator analysis.

Module 8: Real-Time Data Integration

- Techniques for integrating real-time data into predictive and trend analysis workflows.
- Implementing sensor data integration and real-time monitoring systems.
- Utilizing real-time data visualization and alerts for immediate action.
- Managing real-time data integration.

Module 9: Legal and Ethical Considerations

- Legal and ethical considerations related to predictive modeling and trend analysis in OHS.
- Understanding data privacy, security, and algorithmic bias.
- Implementing ethical data handling and model transparency.
- Managing legal and ethical compliance.

Module 10: Communicating Predictive and Trend Analysis Results

- Techniques for communicating predictive and trend analysis results to stakeholders.
- Implementing storytelling and narrative techniques with data visualization.
- Utilizing data-driven presentations and reports for effective communication.
- Managing communication of analytical results.

Module 11: Geospatial Analysis in Predictive Modeling



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- Implementing Geospatial analysis and spatial data in OHS predictive modeling.
- Utilizing geographic information systems (GIS) for spatial risk assessment.
- Implementing spatial clustering and hotspot analysis.
- Managing spatial data in predictive models.

Module 12: Advanced Statistical Modeling

- Implementing Advanced Statistical Modeling.
- Utilizing survival analysis and causal inference in OHS analysis.
- Implementing advanced regression techniques for complex datasets.
- Managing statistical modeling.

Module 13: Integrating External Data Sources

- Implementing Integration of External Data Sources.
- Utilizing public health data and industry benchmarks for context.
- Implementing data merging and normalization for comprehensive analysis.
- Managing external data integration.

Module 14: Developing Data-Driven Safety Culture

- Implementing Development of a Data-Driven Safety Culture.
- Utilizing data to drive safety awareness and engagement across the organization.
- Implementing data literacy training for employees to understand and utilize data.
- Managing safety culture initiatives.

Module 15: Predictive Maintenance and Anomaly Detection

- Implementing Predictive Maintenance and Anomaly Detection.
- Utilizing machine learning models for predictive equipment maintenance.
- Implementing anomaly detection for identifying unusual safety events.
- Managing predictive maintenance.

Module 16: Continuous Improvement in Predictive Analytics



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- ▶ Implementing Continuous Improvement in Predictive Analytics.
- ▶ Utilizing feedback mechanisms and model performance evaluation.
- ▶ Implementing program evaluation metrics and iterative model refinement.
- ▶ Managing improvement processes.