

# DATA SKILLS FOR MANUFACTURERS

IN COLLABORATION WITH BPP





# UNLEASH THE POTENTIAL OF DATA

The manufacturing industry is currently experiencing a data skills gap and a shortage of qualified individuals to fill future positions. To help plug that gap quickly, MTC Training have collaborated with a team of leading data scientists at BPP to develop training modules and apprenticeships focused on data specifically tailored for the manufacturing sector. They cover all the key skills you need to future-proof your business, from thinking like a data scientist to machine learning and predictive modelling.

## WHY UPSKILL IN DATA?

### Industry 4.0 Transformation

The manufacturing industry is undergoing a significant transformation, whereby manufacturers are integrating digital technologies into all aspects of their operations. To remain competitive, manufacturers must embrace automation, data analytics, and connectivity, however, this requires a skilled workforce.

### Increased Efficiency and Productivity

Digital and data skills enable employees to leverage advanced technologies such as IoT devices, robotics, and artificial intelligence, leading to streamlined processes, improved efficiency, and increased productivity.

### Innovation and Adaptability

Foster a culture of continuous improvement and adaptability. Manufacturers who are embracing new technologies are developing innovative products and new ways of working, keeping the company at the forefront of industry trends.

### Supply Chain Optimisation

Manufacturers can use data analytics to forecast demand, manage inventory efficiently, and enhance overall supply chain visibility, reducing costs and improving delivery timelines.

### Customer Expectations

By implementing flexible production processes, Manufacturers can respond quickly to shifting markets and meet customer expectations to produce customised, high-quality products with quick turnaround times.

### Cybersecurity

Digitalisation increases the importance of cybersecurity. The workforce requires educating on cybersecurity practices to protect manufacturing operations and sensitive data from cyber threats.

### Talent Retention and Attraction

Manufacturers investing in upskilling demonstrate a commitment to ongoing colleague development, this will attract the next generation of talent in addition to engaging the existing workforce with opportunities for career progression and career change opportunities leading to long-term colleague retention and succession planning.

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# FLEXIBLE DELIVERY METHODS TO SUIT YOU

Take our new short courses individually or seamlessly integrate with our apprenticeships to boost your skillset. We've got flexible delivery options to put the learning wherever you or your workforce needs it.

From beginners who are just starting to navigate the world of Excel, to the seasoned data scientists aiming for new heights, our programmes cater to a wide range of expertise levels.

## STAND ALONE SHORT COURSES

All 5 courses include a blend of online and face-to-face sessions with a combination of guided, instructor-led and self study learning. They offer a variety of eLearning, online and offline activities, case studies, videos and podcasts, all supported by regular knowledge checks and assessments to ensure maximum engagement and the ability to actively apply knowledge in the workplace straight away. The suite of courses are delivered out of our state-of-the-art training centre in Oxford, OAS.

## OUR SHORT COURSES INCLUDE

- Data Analytics for Decision Makers
- Building and Evaluating Business Experiments
- Business Intelligence Dashboards
- Demand and Price Forecasting
- Predicting Maintenance

## COMBINE WITH OUR LEVEL 3 OR 4 ENGINEERING APPRENTICESHIPS

The manufacturing industry is evolving, and data is leading the change. This option is the ideal solution for entry level engineers who are looking to get ahead.

Seamlessly integrate our bite-sized data modules into existing Level 3 and 4 apprenticeships. It's the perfect skills injection, equipping you or your workforce with the knowledge and tools that are expected to grow in the manufacturing industry.

Courses are delivered face-to-face as a block release course at the end of our level 3 and 4 apprenticeships.

## COMBINE WITH BPP LEVEL 3-7 DATA APPRENTICESHIPS

BPP's comprehensive apprenticeship programmes cater to a wide array of technical expertise, equipping your workforce with the skills they need, whatever their level.

Overlaying our data short courses allows learners to delve deeply into key areas of data to enhance the overall value of the apprenticeships by providing a thorough exploration of crucial concepts and skills in the field of data.

These courses are seamlessly integrated into the apprenticeships, offering an online and live delivery format.



## LEVEL 3 DATA FOUNDATIONS FOR MANUFACTURERS APPRENTICESHIP DELIVERED 100% ONLINE

Months 1-4	Months 5-8	Months 9-11	Month 12	Months 13-15
Induction	Compelling Data Stories	Understanding databases		
Digital Behaviours	Statistics and analysis (in Excel)	Power BI		
Introduction to Data	Advanced automation (in Excel)			
Unlocking the potential of Excel				
Portfolio Development				
Data Analytics for Decision Makers	Building & Evaluating Business Experiments	Business Intelligence Dashboards	Predictive Maintenance	
			Demand and Price Forecasting	
Professional Discussion and EPA Prep	Scenario Demonstration and EPA Prep	Application of Data and EPA Prep	Professional Growth and development in Data	End Point Assessment (EPA)

■ Technical Modules   
   Portfolio Development   
   Manufacturing Workshops  
  EPA Preparation   
   EPA



# DATA ANALYTICS FOR DECISION MAKERS



**LEVEL**  
Intermediate



**DURATION**  
3 Days

## AIM

This course aims to take you on a journey to understand the steps needed to act and build the business case for how data can be used for quality enhancement within your organisation.

## IS THIS COURSE FOR YOU?

- Would you like to better understand the work of your data specialist team so you can better relate to them?
- Would you like to know how to analyse data better and interpret what is being said?
- Would you like to know how to communicate the results of data in a way that people can relate to?
- Would you like to learn to tell a good story with the data that you have?

If you've answered 'yes' to any of the above, then this course is for you.

## LEARNING OBJECTIVES

By the end of this course you will be able to identify 3 ways that your company data can be used to help inform decision enabling you to optimise your business strategies, identify growth opportunities, and minimise risks, ultimately driving higher success rates and profitability.

## COURSE CONTENTS

### Day 1 - Understanding your Data

- Building a Data Driven Culture
- Cost/Benefit Analysis
- Data Sources Within Manufacturing
- Ineffective Use of Data
- Data Quality
- Data Mining Methods

### Day 2 – Analysing Data

- Descriptive Statistics
- Sampling Bias
- Performing A/B tests
- Segmentations
- Time Series
- Linear Regression

### Day 3 – Data Storytelling

- Knowing Your Audience
- Knowing Your Message
- Selecting Your Metric
- Communication Channels
- Structuring Insight



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# BUILDING AND EVALUATING BUSINESS EXPERIMENTS



**LEVEL**  
Intermediate



**DURATION**  
2 Days

## AIM

The aim of this course is to help you to think like a data scientist, create hypotheses, validate your findings and show you how to use business experiments to optimise operations. You will be able to scope and implement effective A/B tests, accurately interpret the statistical results, and determine if a particular hypothesis is true.

## IS THIS COURSE FOR YOU?

- Would you like to be able to think like a data scientist?
- Would you like to take a hypothesis-led approach to business?
- Would you like to know how to sell a Business Experiment internally?
- Would you like to implement A/B tests in your organisation?

If you've answered 'yes' to any of the above, then this course is for you.

## LEARNING OBJECTIVES

By the end of this course you will be able to build and evaluate a business experiment. By conducting business experiments, it will allow you to systematically test changes in operations and measure the impact of those changes on key performance indicators. This approach helps identify the most effective strategies, processes, or interventions, enabling you to make informed decisions and implement optimisations that drive efficiency, productivity, and overall operational excellence.

## COURSE CONTENTS

### Day 1 – Building Business Experiments

- Thinking Like a Data Scientist
- Principles of Business Experiments
- Hypothesis Generation
- The Null Hypothesis
- Selling a Business Experiment
- Product Design Case Study

### Day 2 – Evaluating Business Experiments

- A/B Testing
- Statistical Hypothesis Testing
- Statistical Power



# BUSINESS INTELLIGENCE DASHBOARDS



**LEVEL**  
Intermediate



**DURATION**  
3 Days

## AIM

This course is designed to enable you to take Business Intelligence (BI) to the next level. You will be able to apply design principles to communicate your data for maximum impact and you will be able to create dashboards using Power BI to enable a wide range of business users to access your data and insights.

## IS THIS COURSE FOR YOU?

- Would you like to know how businesses use BI to make smarter decisions?
- Would you like to be able to build dashboard with Power BI?
- Would you like to know how to more effectively gather requirements from your users?
- Would you like to apply chart design principles and communicate with more impact?

If you've answered 'yes' to any of the above, then this course is for you.

## LEARNING OBJECTIVES

By the end of this course you will be able to effectively analyse chart designs and use Power BI to design and create a dashboard. This visualisation capability makes it easier to understand complex data sets, identify trends, patterns, and outliers, and gain valuable insights quickly to ensure your business stays agile, responsive and can be proactive in decision making processes.

## COURSE CONTENTS

### Day 1 – Designing Charts

- Identifying the Right Chart
- Getting the Best from Charts
- Excel Charts
- Excel Pivot Charts
- Good and Bad Visuals
- Data Sources Within Manufacturing

### Day 2 – Using Power BI

- Getting the Most Out of Your Data
- Using PowerQuery in Power BI
- Creating a Binned or Grouped Histogram in Power BI
- Interactivity: Slicers and Filters
- Mapping Your Visuals

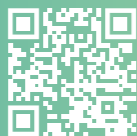
### Day 3 – Gathering Requirements and Dashboard Design

- Dashboards For Manufacturing
- Dashboard Design Process
- Engaging Stakeholders
- Transparency vs Curation
- Types of Dashboards
- Understanding Data Limitations
- Dashboard Design



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## DEMAND AND PRICE FORECASTING



### LEVEL

Intermediate



### DURATION

3 Days

### AIM

The aim of this course is to understand how to produce forecasts using Time Series analysis and similar techniques. The course is designed to provide you with the skills to work with any Time Series data – to analyse patterns and forecast trends – and demonstrate how to apply these skills to make informed decision around demand and price.

### IS THIS COURSE FOR YOU?

- Would you like to know how to analyse Time Series data?
- Would you like to robustly identify trends, seasonality, and other patterns?
- Would you like to understand the statistics behind Time Series analysis?
- Would you like to make accurate forecasts for demand and price?

If you've answered 'yes' to any of the above, then this course is for you.

### LEARNING OBJECTIVES

By the end of this course you will be able to apply Time Series analysis to make predictions from time series data, identify trends, seasonal effects and make forecasts. This can reduce reactive decision-making which can result in higher costs, inefficiencies, and reduced competitiveness.

### COURSE CONTENTS

#### Day 1 – Components of a Time Series

- Time Series
- Establishing Trendlines
- Finding Seasonality
- Identify Seasonal Trends
- Residuals, Cycles and Stationarity

#### Day 2 – Predicting Time Series

- Forecasting Performance Analysis
- Validating a Time Series



## PREDICTING MAINTENANCE



### LEVEL

Intermediate



### DURATION

3 Days

### AIM

The aim of this course is to learn how to develop data science and machine learning based applications for predictive maintenance. The benefit of which is to reduce unplanned downtime and optimise maintenance activities by predicting equipment failures before they occur.

### IS THIS COURSE FOR YOU?

- Would you like to understand Machine Learning (ML) and predictive modelling?
- Would you like to be able to identify the best Machine Learning (ML) technique for the situation?
- Would you like to develop your Exploratory Data Analysis (EDA) skills?
- Would you like to know how to build a Logistic Regression model?
- Would you like to know how to evaluate a Classification model?

If you've answered 'yes' to any of the above, then this course is for you.

### LEARNING OBJECTIVES

By the end of the course you will learn how to reduce machinery downtime through the use of logistic regression techniques to predict maintenance; this could improve the performance of your operations, reducing disruption, reducing need for overtime, increasing productivity and positively impact the budgets for those teams.

### COURSE CONTENTS

#### Day 1 – Exploratory Data Analytics (EDA)

- Business Problem
- Sourcing Data
- Basic Data Hygiene
- Exploring Relationships Between Variables

#### Day 2 – Building a Logistic Regression Model

- Constructing the Model
- Evaluating the Model
- Choosing the Best Model

#### Day 3 – Productionising a Model

- Operationalising
- Evaluating Processes
- Does the Model Generalise

### COURSE PRE-REQUISITES

- Knowledge of or experience with Python is needed in order to complete this module



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