# AI Data Bootcamp

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## Overview

* This program is for second-year generalist consultants.
* Business-oriented professionals with beginner-level technology knowledge
* The objective is to enable consultants to communicate AI & Data concepts effectively and apply them in business contexts

## Duration

* 5 days

## Format

Lectures and hands-on labs. (50%, 50%)

## Prerequisites

* Some background with Unix or Linux including the command line.
* Some knowledge of a programming language such as Python.

## Lab environment

* A reasonably modern laptop or desktop
* Unrestricted connection to the Internet. Laptops with overly restrictive VPNs or firewalls may not work properly
* Chrome browser
  + RDP client for your platform
  + SSH client for your platform

## Program Rationale

### Day 1: Laying the Foundation

• The bootcamp starts with an introduction to AI, ensuring participants understand fundamental concepts before diving into applications.

• Sessions cover AI subfields, its role in business, and relevant case studies, giving consultants a broad perspective on AI’s strategic value.

### Day 2: Understanding Data & Visualization

• Before working with AI models, consultants must understand the types of data they will analyze.

• PowerBI is introduced to help them visualize business data effectively, a key skill in consulting engagements.

### Day 3: Predictive Analytics & Forecasting

• Participants explore predictive analytics and forecasting, learning how businesses make data-driven decisions.

• PowerBI is reinforced as a tool to visualize and interpret predictive models, ensuring a seamless transition from analysis to insights.

### Day 4: Advanced AI & Generative AI

• Deep learning and generative AI are covered, providing exposure to cutting-edge AI technologies.

• Sessions on Prompt Engineering, RAG, and LangChain ensure participants can intelligently discuss AI’s capabilities.

### Day 5: Strategy, Governance & Capstone

• AI governance, ethical considerations, and AI adoption strategies are explored.

• The capstone project integrates all previous learnings, with participants presenting AI-driven business solutions to executives using PowerBI.

## Program Overview – Long Version (5 Days)

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| Day | Session | Theme | Topics | Activities |
| 1 | 1 | Introduction to AI | • Definitions and history of AI • Key AI subfields (ML, DL, GenAI) • Differences between narrow and general AI | • Discuss examples of AI applications across industries • Group exercise: Identify AI use cases in consulting engagements |
| 1 | 2 | AI in Business | • AI’s role in business decision-making • Case studies on AI-driven transformation | • Industry analysis: AI’s impact on consulting sectors • Case study analysis: AI-driven business optimization |
| 2 | 1 | Data Fundamentals | • Structured vs. unstructured data • Data pipelines and sources (APIs, databases, files) • Data governance and quality considerations | • Identify and categorize real-world data sources • Hands-on activity: Exploring structured and unstructured data in business scenarios |
| 2 | 2 | PowerBI for Business Insights | • Data visualization principles • PowerBI features: Functions, calculations, modeling • Interactive dashboard design for consulting | • Hands-on PowerBI exercises: Creating reports, charts, and filters • Case study: Using PowerBI for data-driven consulting insights • Group activity: Analyzing business KPIs with PowerBI |
| 3 | 1 | Predictive Analytics | • Regression, classification, clustering • Machine learning model applications in business | • Explore predictive analytics using PowerBI • Group exercise: Analyze a business forecasting case • Use PowerBI to visualize and interpret model predictions |
| 3 | 2 | Forecasting & Scenario Analysis | • Time series forecasting techniques • Scenario planning for business decision-making • Risk assessment in predictive modeling | • Evaluate historical trends and make predictions • Case study: Forecasting market shifts using data trends • Leverage PowerBI to compare multiple forecasting scenarios |
| 4 | 1 | Advanced AI | • Deep learning fundamentals • Neural networks and their business applications • AI automation and workflow integration | • Explore pre-built AI models • Discussion: Real-world impact of AI in industries • Use PowerBI to summarize AI-driven insights for business presentations |
| 4 | 2 | Generative AI & Prompt Engineering | • Importance of Prompt Engineering • Retrieval-Augmented Generation (RAG) • Introduction to LangChain and AI workflow automation | • Hands-on: Experimenting with different prompt structures • Group exercise: Designing effective AI prompts for consulting use cases • Discussion on integrating RAG and LangChain into workflows |
| 5 | 1 | AI Strategy & Governance | • AI governance frameworks • Managing AI risks in business decision-making • Aligning AI strategy with business goals | • Case study: AI governance challenges in enterprises • Group discussion: Best practices for AI risk mitigation • Develop an AI governance framework and present insights using PowerBI |
| 5 | 2 | Capstone & Executive Presentations | • End-to-end AI consulting project • Presenting AI solutions effectively to executives • Real-world AI case study presentations | • Team-based capstone project: Solve a consulting challenge using AI • Executive-style presentations with structured feedback • Panel Q&A on AI adoption challenges in organizations • Use PowerBI dashboards to support executive presentations |

## Modular Delivery Approach

• Each session is designed to be modular and adaptable for different consulting engagements

• Hands-on discussions, case studies, and exercises reinforce key concepts

• Practical applications ensure relevance to real-world business challenges

# Feedback from McKinsey

## Overall Context to share with NIIT:

Python should be an important part of the training. PowerBI is a good to know, but will be with limited value (at least at the moment), so would be good to have a small part on data viz, but it should not take too much space. Participants will not use Python on a day-to-day basis either, but a base level of understanding is important to work alongside experts, and in more general terms for getting a sense what data and AI work “looks like”.

## More specifically (referring to the table in the docx)

* Day 1 is good – making this interactive will be important; incorporate “discussion: real-world impact of AI industries” here (from day 4)
* Day 2 Session 1 is also fine.
* Day 2 Session 2 – as mentioned above, good to have a small section on data viz but doesn’t need to be the full session. Would be good to have this be an intro to the tech:
  + Some theory (as in session 1) plus (priority) Introducing Python, Power BI, maybe Platform Mckinsey, virtual machines
* Day 3 is fine; in addition to the data modelling part, I’d like to see some of the more software/data engineering parts of building (gen) AI solutions (like a 1h condensed Tech Bootcamp), a bit what is in the bullet “AI automation and workflow integration”); can also incorporate hands-on activities with Python, some Power BI
* Day 4 Session 1 is fine, but here I’d step back from the hands-on part, I think there is no additional value in using PowerBI or Python to do the deep learning part; people need to understand it conceptually. Would keep the deep learning part but not spend too much time here. Good for them to understand RAG, Langchain, but doesn’t need to be hands-on
  + The activity  “discussion: real-world impact of AI in industries” should move to day 1.
  + For hands-on activities on Day 4, this could be a continuation of work done on days 2/3 – doesn’t need to be connected to the more in-depth deep learning/langchain content
* Day 5 Session 1 this should be broader than “AI Strategy and Governance”, but also include (at the minimum) responsible use and ethical and regulatory considerations

I can see modular version, one where we basically only do 1-3, with more emphasis on Python, this is then more an advanced data analysis training. And then a version that is condenses days 2-5, without a lot of the analytical AI things.