

Business Data Analysis

MGM509

Orientation Lecture

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Orientation
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What we will cover

1. Introduction
2. Learn about Course Objectives and Schedule
3. Brief Introduction to Business Data Analysis

Eng. Ahmed Hussein, MBA, PfMP©, PMP© and APMG-Change Management Practitioner

- Lecturer and management consultant with >30 years of executive management experience
- Lecturing experience over 15 years on:
 - Portfolio/ Program / Project Management,
 - Strategic Management and Organizational Change Management and Business Transformation,
 - MIS and Decision Support
- > 20 Years in Data Sciences
- Delivered many courses in Data Science and Data Analysis to business professionals
- Led Strategic Insights and MIS departments in several organizations across the region



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Course Objectives and Schedule



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Course Objectives and Learning Outcomes

1

Define data analysis processes and techniques.

2

Develop the ability to gather, clean, and organize data for meaningful analysis.

3

Apply statistical tools and techniques for analyzing large data sets.

4

Visualize data for clear and impactful presentations

5

Interpret data results to support strategic decision-making

6

Address ethical considerations in the use of data and its analysis

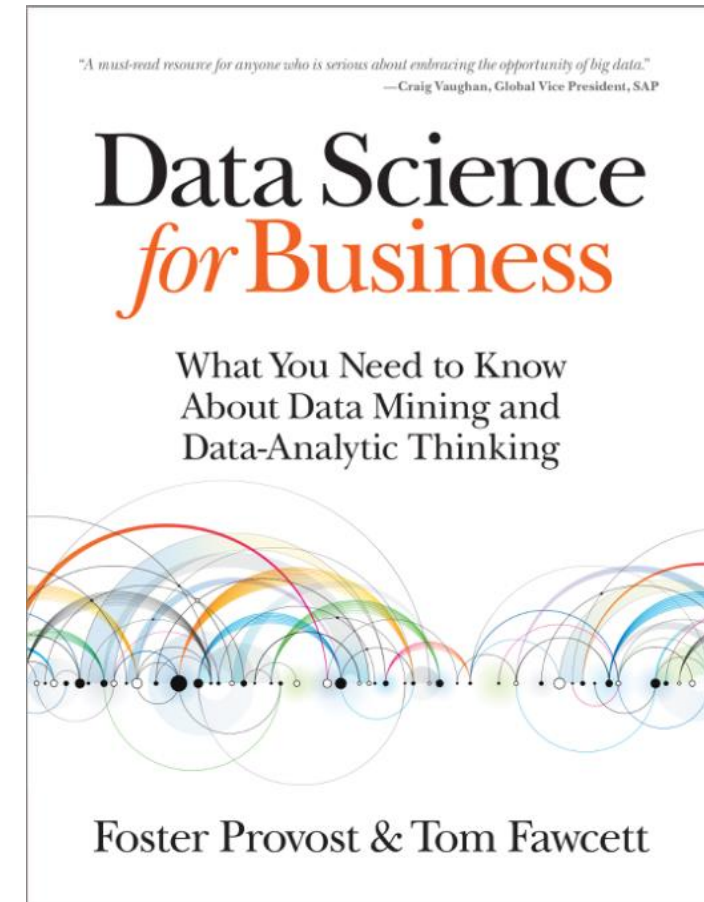
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Course Schedule and Topics

Week	Lecture	Lecture Topic	Discussion Panel	Quiz
Week 1	Orientation Lecture	Orientation Lecture	✓	✓
Week 2	Lecture 1	From Business Challenges to Data Science Solutions	✓	✓
Week 3	Lecture 2	Predictive Modeling Foundations: Correlation to Segmentation	✓	✓
Week 4	Lecture 3	Building Better Models: Regression, SVMs, and Model Fitting	✓	✓
Week 5	Lecture 4	Avoiding Pitfalls: Overfitting, Evaluation, and Complexity Control	✓	✓
Week 6	Lecture 5	Similarity and Segmentation: Neighbors, Clusters, and Business Use Cases	✓	✓
Week 7	Lecture 6	What Makes a Good Model? Decision-Analytic Thinking in Practice	✓	✓
Week 8	Lecture 7	Evaluating and Communicating Performance: ROC, Lift, and Profit Curves	✓	✓
Week 9	Lecture 8	Reasoning Under Uncertainty: Bayesian Thinking and Evidence Models	✓	✓
Week 10	Lecture 9	Working with Unstructured Data: Text Mining and Representation	✓	✓
Week 11	Lecture 10	Strategic Data Science: Engineering Solutions, Advanced Techniques, and Business Strategy	✓	✓
Week 12	-	-	✓	
Week 13	-	Beginning of Final Exams		

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- Required Textbook:
“Data Science for Business” by Foster Provost & Tom Fawcett
- The main material and reference for the course will be the textbook, lecture notes and slides. and any additional resources that are prepared by the professor.



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Introduction to Business Data Analysis



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Data as a Strategic Asset

- Data is more than byproduct—it's an enabler of better decisions.
- Smart use of data can outperform intuition or experience.
- Investments in data infrastructure should align with business goals.

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Why Data Science Matters?

- Data is now a central business asset.
- Competitive advantage increasingly comes from how well organizations use data.
- Every business decision is a potential data science opportunity

- **Data**: Raw, unprocessed facts and figures without context. Data can be numbers, symbols, characters, or images that on their own may not have meaning.
- **Information**: Processed, organized, or structured data that has meaning and is useful for decision-making.

Examples for Data and Information

- **Data**: 23, Red, 07/06/2025
- **Data**: Sales amount was 1,000 USD
- **Information**: “Order #23 was delivered on 07/06/2025 in Red color”
- **Information**: Daily Sales amount has declined by 50% for a 7th day from yearly average of 2,000 USD to 1,000 USD.

Definition of Data Science and Data Mining

Data Science is a set of fundamental principles that guide the extraction of knowledge from data.

Data Mining is the extraction of knowledge from data, via technologies that incorporate data science principles.

- Combines statistics, machine learning, and domain expertise
- Not just about tools– it's about **thinking analytically**

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Data Analytic Thinking

- A mindset that views business problems as analytical tasks.
- Involves:
 - Framing problems as data questions.
 - Identifying the kind of data needed.
 - Understanding what the data can and cannot tell you.



From Big Data 1.0 to 2.0

- **Big Data** means data sets that are too large for traditional data processing systems and require new processing technologies.
- **Big Data 1.0**: Infrastructure and storage.
- **Big Data 2.0**: Analysis, modeling, and decision-making.
- Focus shifts from “having data” to “using data intelligently.”

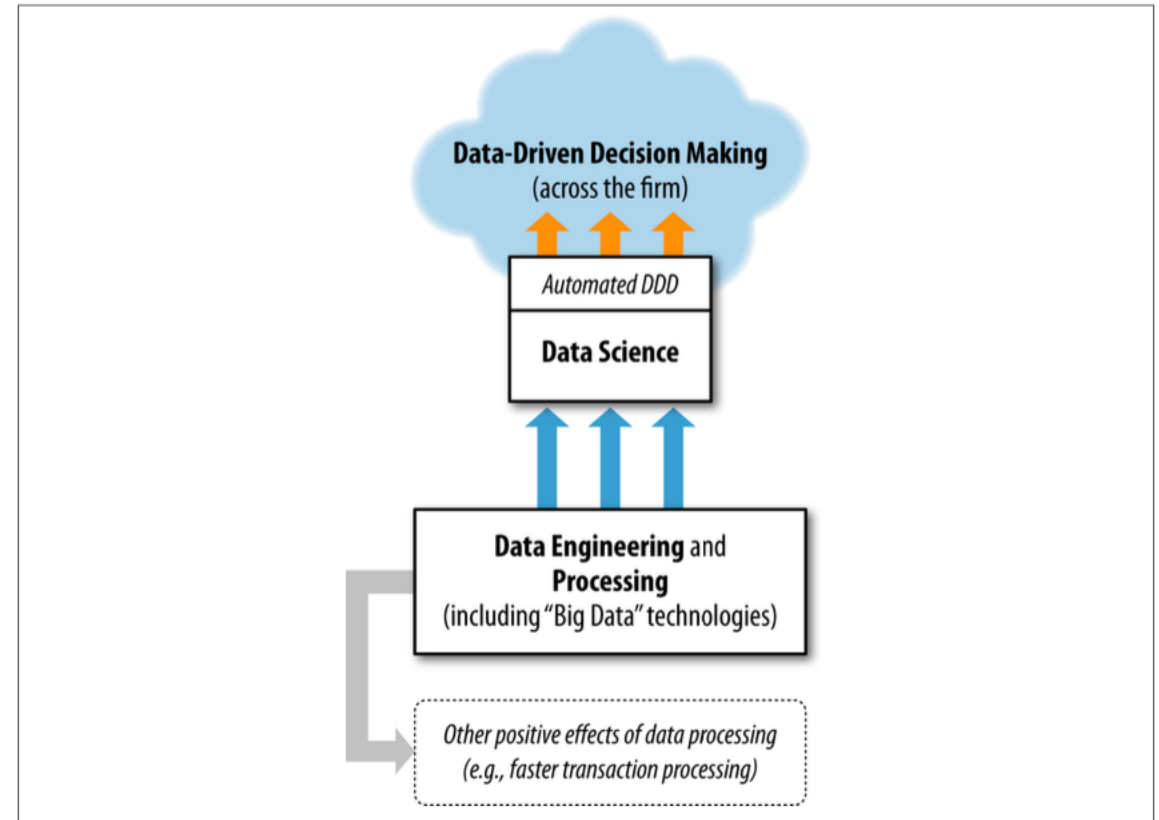
Data Science vs. Data Engineering

- Data Engineering: Collecting, storing, and processing data.
- Data Science: Extracting insights, creating models, and guiding action.
- Both are essential, but serve different purposes.

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Data Driven Decision-Making (DDD)

- **Data-driven decision-making (DDD)** refers to the practice of basing decisions on the analysis of data, rather than purely on intuition.



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Customer Churn/Turnover

- **Problem:** Identify which customers are likely to leave.
- **Approach:** Use past behavior and attributes to predict churn.
- **Insight:** Data enables proactive retention strategies.



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Key Points

Data is a strategic business asset

Applying Data Science to analyze data and generate insights can be a source of Competitive Advantage.

Data-analytic thinking is a must-have skill in today's business world.

Success with data science begins by asking the right questions.

For Discussion Panel and Next Lecture:

- Reading, Chapter 1 from textbook: “Data Science for Business” by Foster Provost & Tom Fawcett

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For Discussion Panel and
Next Lecture



Thank You