Elective Courses Offered by Operations Management and Statistics Group

Roadmap to Elective Courses offered by OM & Stats:
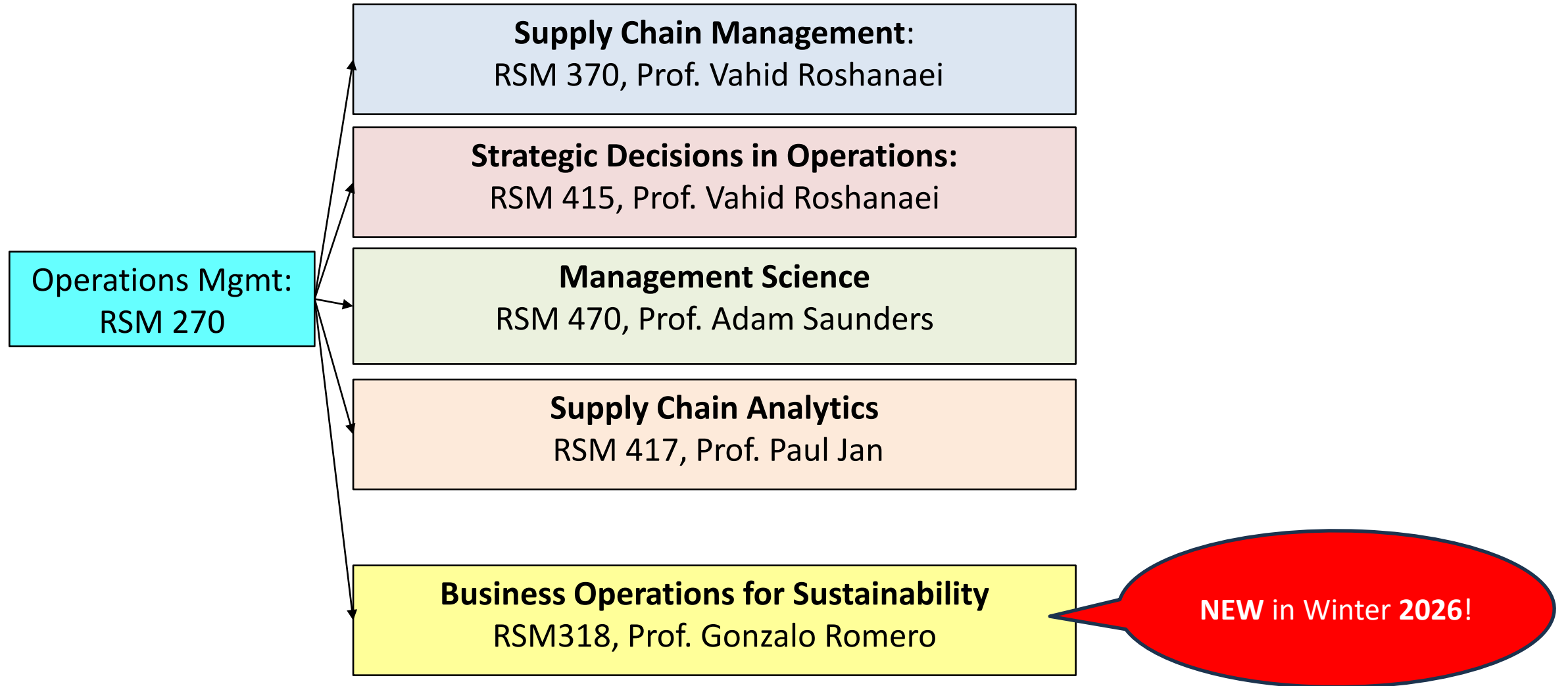
Roadmap to Elective Courses offered by OM & Stats: Focus in Data Science in Business:

Data & Info Management for Business Analytics
RSM 371, Prof. Gerhard Trippen

Should be taken *before* RSM338 and RSM358!

Text Mining & Natural Language Processing
RSM 317, Prof. Gerhard Trippen
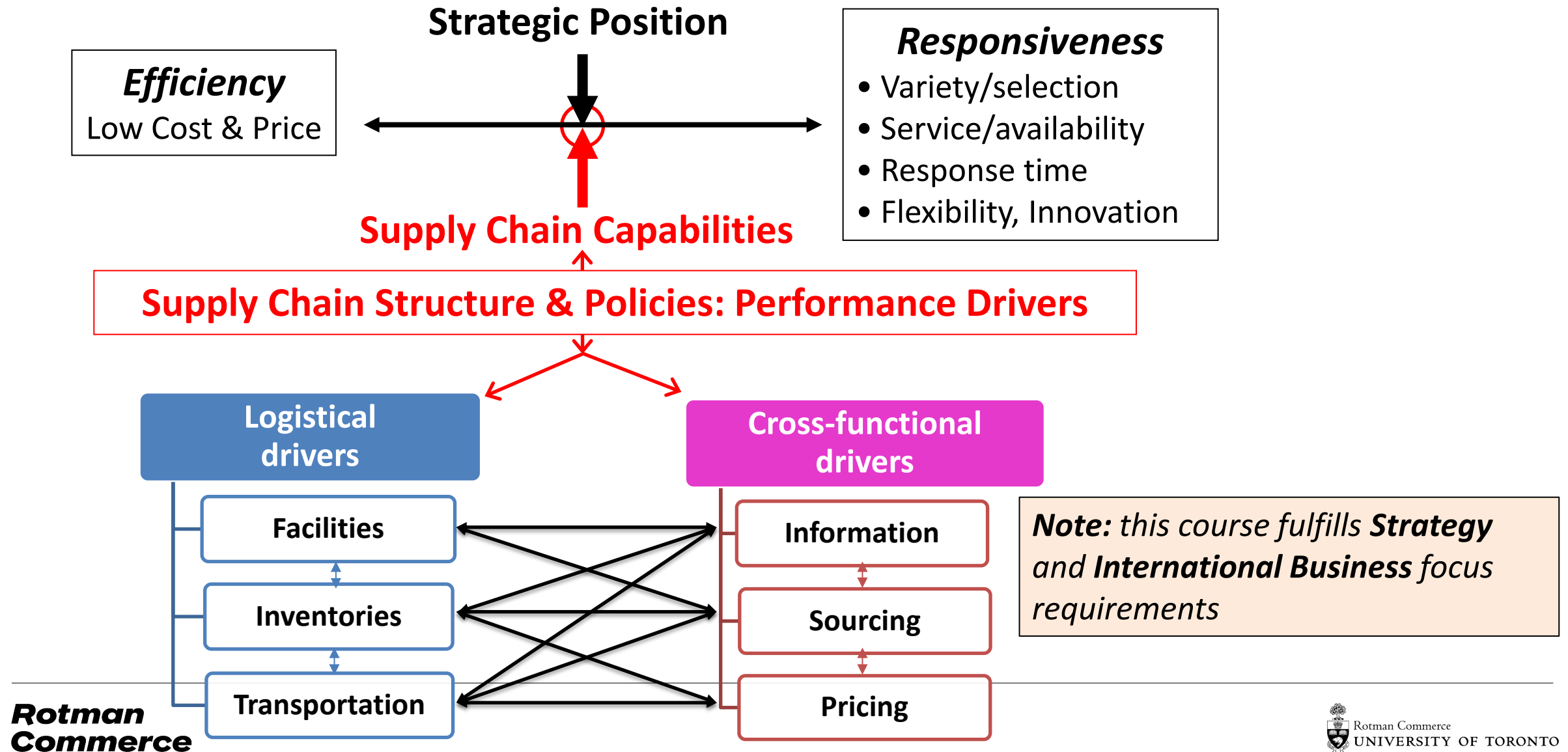
Supply Chain Analytics
RSM 417, Prof. Paul Jan

Generative AI for Data-Driven Management
RSM416, Prof. Gerhard Trippen

NEW in Winter **2026**!

RSM 370: Supply Chain Management

Strategic Position

Efficiency
Low Cost & Price

Responsiveness
- Variety/selection
- Service/availability
- Response time
- Flexibility, Innovation

Supply Chain Capabilities

Supply Chain Structure & Policies: Performance Drivers

Logistical drivers

- Facilities
- Inventories
- Transportation

Cross-functional drivers

- Information
- Sourcing
- Pricing

*Note: this course fulfills **Strategy** and **International Business** focus requirements*

Rotman Commerce

Rotman Commerce
UNIVERSITY OF TORONTO

RSM 417: Supply Chain Analytics
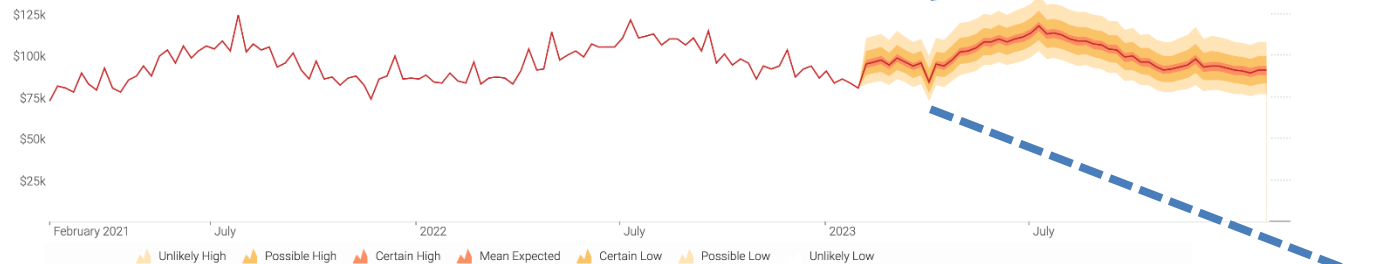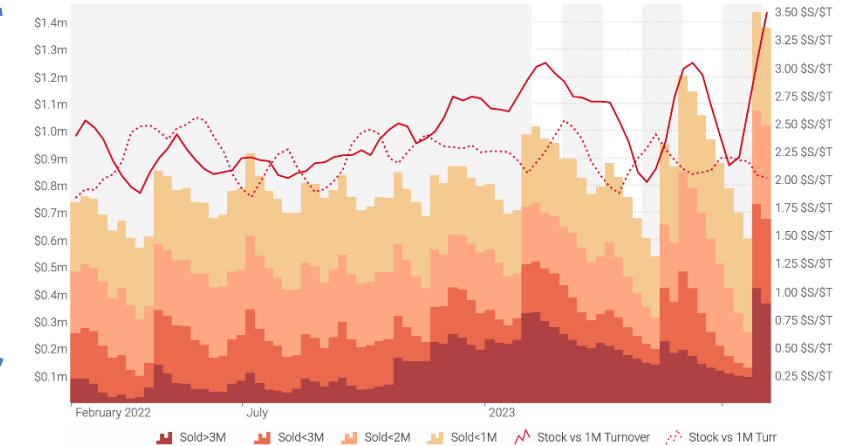
Work with real data from a company in the GTA area to improve its forecasting, inventory, and pricing practices. Students get to:

- Conduct a supply chain consulting project
- Interact with director-level stakeholders from the partnering company
- See probabilistic forecasting in action
- Translate technical analytics to executive-level recommendations through effective communication
- Present findings to company stakeholders at the end of the semester
- *Note: this course fulfills Strategy and Data Science focus requirements*

RSM 415: Strategic Decisions in Operations

$$V = C \times (A + P)$$

Value
- How to link operations decisions to value?
- What are the operational KPIs?

Capabilities
- What are the trade-offs?
- Along which dimensions should vs does the OS excel?

Assets
- **Sizing:** How many assets should we invest in?
- **Timing:** When to expand or shrink capacity?
- **Type:** What kinds of assets are best?
- **Location:** Where should assets be located?

Processes
- **Supply:** What activities to in-source or outsource?
- **Technology:** Which technologies do our processes need?
- **Demand:** How do we match demand to available supply?
- **Innovation:** How and when do we improve and innovate?
- **Risk:** How to manage risk?

Note: this course fulfills **Management Specialist & Strategy and Innovation** *focus requirements (maybe added to "data science" focus later).*

Rotman Commerce

Rotman Commerce
UNIVERSITY OF TORONTO

Why take RSM 470: Management Science Modelling with Spreadsheets?

What is *Management Science*?

Management Science deals with applying quantitative techniques
to the analysis of managerial decision problems

Quantitative techniques are drawn from outside sources, e.g., mathematics, computer science, social science

The basis for almost every management science

application and the focus of the course is

Why use *Quantitative Modelling*?

MS models can provide significant competitive advantage

Unprecedented (and growing) availability of computing power

Easy availability of software tools (e.g., EXCEL software) using spreadsheets

Availability of large volumes of data (Analytics)

Tremendous investment by many organization in databases and IT technology

Pressure to deliver economic returns on these investments

Quantitative Modelling

Rotman Commerce

Rotman Commerce
UNIVERSITY OF TORONTO

RSM 371: Data and Information Management for Business Analytics

Motivation.

1. 80% of Big Data projects involve extracting, cleaning and preparing raw data for analysis

2. Not sure which direction you will go after graduation?

  - Introduces essential data and information management skills that are in demand in a number career paths

3. Give you practical, hands on data working experience using applications that are in high demand in today's workforce (Python & SQL)

Course includes 5-6 weeks of teaching SQL and 6-7 weeks of teaching Python.

Take RSM371H1 if you want to learn how to: **Find, Wrangle, Visualize, and Discover** data

Learning Objectives:

1. Apply Relational Database Management Systems Design concepts from analysis to implementation

2. Use Structured Query Language (SQL) statements to extract and summarize data from a relational database

3. Prepare, explore and validate sample data for business analysis

4. Apply advanced spreadsheet data analysis techniques towards the development of decision-making tools

5. Develop and implement business intelligence dashboards to support business decision-making.

Recommendation: Take after CSC108 but before other Data Science in Business courses!

Rotman Commerce

Rotman Commerce
UNIVERSITY OF TORONTO

RSM 317: Text Mining and Natural Language Processing

Introduction to a diverse collection **text mining** techniques and **natural language processing** using **machine learning**.

Identification and **quantification** of various structures in the text data to **answer business problems** and **provide managerial insights**.

Model validation and effective communication of model-based results will be stressed.

The course will employ a "**white-box**" methodology, which emphasizes an **understanding** of the **algorithmic and statistical model** structures and how they apply to text analysis.

Following leading industry standards, this **hands-on** course will use **Python** to apply a number of different algorithms to real-world big text data.

Topics:

Natural Language and Text Processing

Structures and Features of Web Content (HTML, XML, JSON) and Web Scraping

Regular Expressions

Spellchecking

Tokenization and Normalization

Bag of Words, Document-Term Matrix, TF-IDF

Classification Algorithms with Neural Networks

Summarization and Information Extraction

Similarity Analysis, Clustering and Topic Modelling

Semantic Analysis / Sentiment Analysis

Text Generation (GenAI)

Rotman Commerce

Rotman Commerce
UNIVERSITY OF TORONTO

Thank you!