



Course Description

MAN4732 | Business Intelligence for Supply Chain | 4.00 credits

This course will enable students to synthesize their learning from program coursework. The global context within which firms operate will provide the foundation for understanding global supply chain strategy, from market entry through to the integration of demand management and supply management processes to meet corporate objectives. The course will utilize exercises and a simulation to allow students to analyze and synthesize program coursework. The course will help students understand how to best use program knowledge to maximize value creation for employers and in their own career.

Course Competencies:

Competency 1: The student will Perform break-even analysis to make supply chain management decisions by:

1. Defining the term management science. Describing the nature of management science. Explaining what a mathematical model is

Competency 2: The student will Build a linear programming-based mathematical model to capture the real-life decision-making process by:

1. Utilizing a mathematical model to perform break-even analysis. Utilizing a spreadsheet model to perform break-even analysis. Describing the relationship between analytics and management science

Competency 3: The student will Solve linear programming model using the graph method and using the Excel spreadsheets by:

1. Explaining what linear programming is
2. Identifying the three key questions to be addressed when formulating any spreadsheet model
3. Formulating a basic linear programming model in a spreadsheet from a problem description
4. Utilizing Excel to solve a linear programming spreadsheet model

Competency 4: The student will Perform sensitivity analysis to know the supply chain managerial interpretation of the linear programming model by:

1. Explaining what is meant by what-if analysis
2. Summarizing the benefits of what-if analysis
3. Expecting how the value in the objective cell would change if a small change were made in the right-hand side of one or more of the functional constraints
4. Describing the goal of robust optimization and how it is implemented with independent parameters
5. Utilizing chance constraints to deal with constraints that can be violated slightly

Competency 5: The student will Model a wide variety of medium to large linear programming (LP) problems applied in the various functional areas of supply chain management, such as inventory, production, finance, transportation, operations, etc. by:

1. Identifying the kind of decision-making environment for which decision analysis is needed. Describing the logical way in which decision analysis organizes a problem
2. Expressing and evaluating several alternative criteria for deciding. Applying Bayes' decision rule to solve a decision analysis problem
3. Utilizing an Analytic Solver to construct and solve a decision tree. Describing some standard features in the practical application of decision analysis

Competency 6: Perform network analysis, decision analysis for uncertain situations, and waiting line analysis to make managerial decisions in the supply chain by:

1. Describing some essential types of forecasting applications
2. Identifying two standard measures of the accuracy of forecasting methods
3. Adjusting forecasting data to consider seasonal patterns
4. Describing several forecasting methods that use the pattern of historical data to forecast a future value

5. Applying these methods either by hand or with the software provided
6. Comparing these methods to identify the conditions when each is particularly suitable. Describing and applying an approach to forecasting that relates the quantity of interest to one or more other quantities
7. Describing several forecasting methods that use expert judgment

Learning Outcomes:

- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information
- Demonstrate knowledge of ethical thinking and its application to issues in society
- Demonstrate knowledge of diverse cultures, including global and historical perspectives
- Create strategies that can be used to fulfill personal, civic, and social responsibilities
- Use computer and emerging technologies effectively
- Demonstrate an appreciation for aesthetics and creative activities
- Describe how natural systems function and recognize the impact of humans on the environment