

COMC007 – Business Analytics and Decision Science

Master of Commerce
Semester III
DSC - Core Paper
Business Analytics and Decision Science

Course Type/ Course Code	Course Title	Lectures	Tutorials	Practical	Credit	Pre-requisites
COMC007	Business Analytics and Decision Science	3	1	0	4	NIL

Objective: This course provides a comprehensive understanding of Business Analytics and Decision Science, integrating quantitative and analytical tools for informed business decision-making. Students will learn how to analyse data, build models, and apply optimisation and predictive techniques to solve real-world business problems effectively.

Learning Outcomes: On completion of this course, the student should be able to:

- Explain the scope and disciplines of Business Analytics and Decision Science.
- Differentiate between analysis and analytics and understand their business implications.
- Apply decision theory and game theory for strategic problem-solving.
- Formulate and solve optimisation models such as Linear Programming, Assignment, and Transportation problems.
- Integrate analytical reasoning with ethical and data-driven decision frameworks.

Contents:

Unit I (10 Hours)

Introduction to Business Analytics. Key terms: Data, Metric, KPI, Dashboard, Insight, Decision making under risk and uncertainty, Types of Analytics, Application of Analytics in Business.

Unit II (11 Hours)

Artificial Intelligence and Machine Learning: Types and Applications, Ethical issues in analytics, Contemporary development and issues in business analytics, Security and Privacy issues in analytics.

Unit III (12 Hours)

Introduction to Management Science, Linear Programming Problem (LPP): formulation, graphical and simplex methods, duality, sensitivity analysis, Assignment Problem:

formulation, Hungarian method, and applications, Transportation Problem: formulation, initial feasible solution methods (NWCM, Least Cost, Vogel's Approximation), test for optimality.

Unit IV

(12 Hours)

Network Techniques: PERT and CPM, Resource allocation and levelling, Game theory fundamentals: method and applications.

Tutorial Exercise:

Students shall be asked to perform comparative exercises: types of analytics, Real-life business case studies using Excel or software (LPP, assignment, transportation, game theory), Model building and interpretation for business decisions, and Group presentations on the integration of analytics and decision science in real businesses

Suggested Readings:

- Dangi, H.K., & Kaur, Gurveen (2024). *Business Analytics*, Taxmann Publications.
- Evans, J.R. (2017). *Business Analytics: Methods, Models, and Decisions*, Pearson.
- Hillier, F.S., & Lieberman, G.J. (2021). *Introduction to Operations Research*, McGraw Hill.
- Provost, F. & Fawcett, T. (2013). *Data Science for Business*, O'Reilly.
- Vohra, N.D., & Arora, H., (2021). *Quantitative Techniques in Management*, McGraw Hill.
- Winston, W.L. (2022). *Operations Research: Applications and Algorithms*, Cengage.