



Course Syllabus

Course Code	Course Title	ECTS Credits
IMGT-490	Analytical Decision Making	6
Prerequisites	Department	Semester
IMGT-486	Management and MIS	Fall, Spring
Type of Course	Field	Language of Instruction
Required	Management	English
Level of Course	Lecturer(s)	Year of Study
1 st Cycle	Harry Kogetsidis	3 rd or 4 th
Mode of Delivery	Work Placement	Corequisites
Face to Face	N/A	None

Course Objectives:

The main objectives of the course are to:

- introduce students to the basic principles of operational research / management science and to familiarise them with its basic concepts
- introduce students to a range of analytical methods and tools
- develop students' ability to build numerical models and use them to propose policy alternatives
- develop students' analytical skills
- develop students' ability to summarise and present data in a professional way
- develop students' skills in practical decision making
- develop students' ability to communicate effectively with non-technical managers
- provide a conceptual understanding of the role of the methods of science in decision making
- help students appreciate the limitations of the methods of science in decision making.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. recognise the importance of operational research / management science in providing appropriate analytical and processual support to management
2. recognise the importance of analytical methods in problem solving and decision making
3. structure business and management problems so that these can be solved by numerical means

4. select appropriate analytical methods to address particular types of business and management problems
5. use appropriate analytical methods to solve business and management problems
6. formulate analytical models to help propose policy alternatives
7. summarise and present data in a professional way
8. appreciate the limitations of the methods of science in decision making
9. communicate effectively with non-technical managers.

Course Content:

Linear programming – part 1 (Formulating and solving linear programming problems with two decision variables – the graphical solution method).

Linear programming – part 2 (Formulating and solving linear programming problems with more than two decision variables – the Simplex method).

Linear programming – part 3 (Securing a starting feasible solution in linear programming – the Two-Phase method).

Linear programming – part 4 (Special applications of linear programming – the transportation model).

Linear programming – part 5 (Special applications of linear programming – the assignment model).

Forecasting – part 1 (Time series forecasting using simple exponential smoothing).

Forecasting – part 2 (Dealing with trend – time series forecasting using Holt's exponential smoothing).

Forecasting – part 3 (Dealing with seasonality – time series forecasting using time series decomposition).

Forecasting – part 4 (Measuring forecast accuracy).

Learning Activities and Teaching Methods:

Lectures, group work, case studies, computer workshops, solving problems in class and in the computer lab, guest speakers, homework and background reading.

Assessment Methods:

Tests, homework activities, student projects, mid-term examination, final examination.

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
An Introduction to Management Science – Quantitative Approaches to Decision Making (14 th ed.)	D. R. Anderson, D. J. Sweeney, T. A. Williams, J. D. Camm, J. J. Cochran, M. J. Fry and J. W. Ohlmann	Cengage Learning	2016	9781111823610
Introduction to Operations Research (9 th ed.)	F. Hillier and G. Lieberman	McGraw-Hill	2010	9780073376295