MANAGEMENT ENGINEERING (LM54)

(Lecce - Università degli Studi)

Teaching BUSINESS ANALYTICS

GenCod A005655

Owner professor GIANPAOLO GHIANI

Teaching in italian BUSINESS ANALYTICS

Teaching BUSINESS ANALYTICS

SSD code MAT/09

Reference course MANAGEMENT ENGINEERING

Course type Laurea Magistrale

Credits 9.0

Teaching hours Front activity hours: 81.0

For enrolled in 2022/2023

Taught in 2022/2023

Course year 1

Language ITALIAN

Curriculum Percorso comune

Location Lecce

Semester Second Semester

Exam type Oral

Assessment Final grade

Course timetable https://easyroom.unisalento.it/Orario

BRIEF COURSE DESCRIPTION	This course addresses the principles and practice of Business Analytics (BA), with an emphasis on applictions to logistics, transportation and supply chain management.
REQUIREMENTS	Calculus. Probability and Statistics. Linear Algebra.

COURSE AIMS

Knowledge and understanding. The course introduces the student to the use of analytics in the business world.

- Students will acquire the basic cognitive tools to think analytically, creatively, critically and in an inquiring way, and have the abstraction and problem-solving skills needed to cope with complex business problems.
- They will have solid knowledge of BA methodologies.
- They will be able to use analytics to improve decision-making processes.

Applying knowledge and understanding. After the course the student should be able to:

- describe and use the main BA techniques;
- understand the differences among several algorithms solving the same problem and recognize which one is better under different conditions;
- explain experimental results to business people.

Making judgements. Students must have the ability to use BA techniques and must arrive at original and autonomous ideas and judgments.. The course promotes the development of independent judgment in the appropriate choice of techniques/models and the critical ability to interpret the goodness of the results of the chosen models/methods.

Communication. It is essential that students are able to communicate with a varied and composite audience, not culturally homogeneous, in a clear, logical and effective way, using the methodological tools acquired and their scientific knowledge and, in particular, the specialty vocabulary. Students should be able to organize effective dissemination and study material through the most common presentation tools, including computer-based ones, to communicate the results of data analysis processes, for example by using visualization and reporting tools aimed at different types of audiences.

Learning skills. Students must acquire the critical ability to relate, with originality and autonomy, to the typical problems of data mining and, in general, cultural issues related to other similar areas. They should be able to develop and apply independently the knowledge and methods learnt with a view to possible continuation of studies at higher (doctoral) level or in the broader perspective of cultural and professional self-improvement of lifelong learning. Therefore, students should be able to switch to exhibition forms other than the source texts in order to memorize, summarize for themselves and for others, and disseminate scientific knowledge.

TEACHING METHODOLOGY

The course consists of lectures, classroom exercises and home assignments. Lectures aim at providing the methodological foundations. They are given using slides and/or a blackboard. Students are invited to participate by asking questions and presenting examples. The exercises and home assignments are about the solution of practical problems with software tools.

ASSESSMENT TYPE

The exam consists of two parts:

- a written test made up of 15 questions [15 marks];
- an oral exam in which the students must show their ability to use the software tools presented in the course (Python libraries for descriptive, predictive and prescriptive analytics) by illustrating how they have solved a number of problems/exercises assigned in class [15 marks]; the list of assignments is available on FormazioneOnLine.

ASSESSMENT SESSIONS

Consult www.studenti.unisalento.it

OTHER USEFUL INFORMATION	**Office Hours** By appointment. As a rule, on Tuesdays at 11:00 in my office or on Microsoft Teams. Please contact the instructor by email or at the end of the lectures.
FULL SYLLABUS	PART I – INTRODUCTION (5 hours) 1.1 Introducing BI (5 hours) PART II – PROGRAMMING SKILLS (8 hours) 2.1 Getting started in Python (8 hours) PART III – DESCRIPTIVE ANALYTICS (10 hours) 3.1 Making sense of data, visualising and exploring data (1 hour) 3.2 Descriptive statistical measures (9 hours) PART IV – PREDICTIVE ANALYTICS (32 hours) 4.1 Forecasting: basics (2 hours) 4.2 Extrapolating time-series (8 hours) 4.3 Regression models (10 hours) 4.4 Basics of classification models (2 hours) 4.6 Performance evaluation with discrete event simulation: basics, random number generation, output analysis, SIMIO tutorial (10 hours) PART V – PRESCRIPTIVE ANALYTICS (26 hour) 5.1. Optimization model review (8 hours) 5.2 Applications to logistics, manufacturing and transportation (18 hours)
REFERENCE TEXT BOOKS	Handouts (available on http://elearning.unisalento.it/) For consultation: ▪ Evans, James Robert. Business analytics: Methods, models, and decisions. Vol. 3. Upper Saddle River, NJ: Pearson, 2013. ▪ Ghiani, Gianpaolo, Gilbert Laporte, and Roberto Musmanno. Introduction to logistics systems management. John Wiley & Sons, 2013.