MANAGEMENT ENGINEERING (LM54)

(Lecce - Università degli Studi)

Insegnamento BUSINESS ANALYTICS

GenCod A005655
Docente titolare GIANPAOLO GHIANI

Insegnamento BUSINESS ANALYTICS

Insegnamento in inglese BUSINESS ANALYTICS

Settore disciplinare MAT/09

Corso di studi di riferimento
MANAGEMENT ENGINEERING

Tipo corso di studi Laurea Magistrale

Crediti 9.0

Ripartizione oraria Ore Attività frontale:
81.0

Per immatricolati nel 2020/2021

Erogato nel 2020/2021

Anno di corso 1

Lingua ITALIANO

Percorso Percorso comune

Sede Lecce

Periodo Secondo Semestre

Tipo esame Orale

Valutazione Voto Finale

Orario dell'insegnamento
https://easyroom.unisalento.it/Orario

BREVE DESCRIZIONE DEL CORSO	This course addresses the principles and practice of Business Analytics (BA), with an emphasis on applictions to logistics, transportation and supply chain management.

PREREQUISITI	Calculus. Probability and Statistics. Linear Algebra.

OBIETTIVI FORMATIVI	**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.

METODI DIDATTICI	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.

MODALITA' D'ESAME	The exam consists of two parts:

- a written test made up of 10 questions [10 marks];
- an oral exam in which students must:

1. discuss a presentation of their own on an advanced course topic [10 marks];
2. show their ability to use the software tools presented in the course (Python libraries for machine learning, AMPL, ...) [10 marks].

ALTRE INFORMAZIONI UTILI	**Office Hours** By appointment. As a rule, on Tuesdays at 11:00 in my office or on Skype (nickname: gianpaolo_ghiani). Please contact the instructor by email or at the end of the lectures.

PROGRAMMA ESTESO

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, visualizing and exploring data (1 hour)
3.2 Descriptive stastical measure (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 (4 hours)
4.4 Basics of classification models (2 hours)
4.5 Performance evaluation with analytical methods: queueing models (6 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, AMPL (8 hours)
5.2 Applications to logistics, manufacturing and transportation (18 hours)

TESTI DI RIFERIMENTO

Handouts (available on FormazioneOnLine.
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.