

FACULTY OF **ENGINEERING**

DEGREE COURSE: **COMPUTER AND CONTROL ENGINEERING**

MASTER DEGREE: **COMPUTER AND CONTROL ENGINEERING**

SUBJECT: TRANSACTIONAL SYSTEMS AND DATA MINING

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OBJECTIVES

- Provide the student with the basic tools for knowledge extraction from data analysis
 - Study the most important state of the art descriptive and prediction models in the framework of data mining
 - Show how to use an available open source data mining tool and how to exploit it for building a user application
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CONTENTS

1. Introduction to data mining and knowledge extraction
 2. Data preprocessing
 3. Distance and similarity measures
 4. Descriptive analysis by means of clustering techniques
 5. Descriptive analysis by means of association rules
 6. Predictive analysis by means of classification algorithms
 7. The WEKA open source data mining tool
 8. Using WEKA API
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LEARNING OUTCOMES

The student will acquire specific competences for analyzing data and generating models for exploiting the knowledge provided by it.

The student will be able to solve clustering, classification and frequent pattern mining problems by using an open source data mining tool.

The student will be able to design and develop a simple but complete application that integrates one or more techniques discussed in the course.

ASSESSMENT

Written exam: multiple-choice tests and open-ended questions

RECOMMENDED TEXTBOOKS

The main concepts of the course will be presented in the teaching material provided by the professor and available on the elearning platform. Most of the topics can be also studied in depth in the following books:

J. Han, M. Kamber, Data Mining: Concepts and Techniques, 2nd ed., Morgan Kaufmann Publishers, 2006 (mainly recommended for the theoretical aspects)

Ian H. Witten, Eibe Frank, Mark A. Hall, "Data Mining: Practical Machine Learning Tools and Techniques 3rd Edition", Morgan Kaufmann Publishers Inc. San Francisco, CA, USA, 2011 (includes the WEKA software presentation and example of use)

