Course guide
270517 - IKPD - Incorporating the Know-How into the Decision Process

Last modified: 12/07/2022

Unit in charge: Barcelona School of Informatics
Teaching unit: 715 - EIO - Department of Statistics and Operations Research.

Degree: MASTER'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2012). (Optional subject).

Academic year: 2022 **ECTS Credits:** 1.5 **Languages:** Catalan

LECTURER

Coordinating lecturer: CARINA GIBERT OLIVERAS

Others: Primer quadrimestre:
CARINA GIBERT OLIVERAS - 10

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CDG1. Capability to integrate technologies, applications, services and systems of Informatics Engineering, in general and in broader and multicisciplinary contexts.
CTE9. Capability to apply mathematical, statistical and artificial intelligence methods to model, design and develop applications, services, intelligent systems and knowledge-based systems.

Generical:
CG8. Capability to apply the acquired knowledge and to solve problems in new or unfamiliar environments inside broad and multidisciplinary contexts, being able to integrate this knowledge.

Transversal:
CTR3. TEAMWORK: Capacity of being able to work as a team member, either as a regular member or performing directive activities, in order to help the development of projects in a pragmatic manner and with sense of responsibility; capability to take into account the available resources.
CTR4. INFORMATION LITERACY: Capability to manage the acquisition, structuring, analysis and visualization of data and information in the area of informatics engineering, and critically assess the results of this effort.
CTR6. REASONING: Capacity for critical, logical and mathematical reasoning. Capability to solve problems in their area of study. Capacity for abstraction: the capability to create and use models that reflect real situations. Capability to design and implement simple experiments, and analyze and interpret their results. Capacity for analysis, synthesis and evaluation.

Basic:
CB6. Ability to apply the acquired knowledge and capacity for solving problems in new or unknown environments within broader (or multidisciplinary) contexts related to their area of study.
CB7. Ability to integrate knowledges and handle the complexity of making judgments based on information which, being incomplete or limited, includes considerations on social and ethical responsibilities linked to the application of their knowledge and judgments.
CB8. Capability to communicate their conclusions, and the knowledge and rationale underpinning these, to both skilled and unskilled public in a clear and unambiguous way.

TEACHING METHODOLOGY

Very specific course, contentrated on time. Totally given in the laboratory room. Case-based learning approach, with small conceptual introductions. Small practical works to consolidate the obtained knowledge. During the first week the conceptual bases of the course will be presented and the activities to be developed by every student will be distributed.
There is an exercise based on the reading of a text about decision-making, where the student must identify the use of the a priori knowledge made, the assumptions, and must analyze drawbacks and advantages of the decision process described on the paper.
In a second exercice, in groups, a new application will be developed. The case can be proposed by both the students or the conductor of the course.
Besides the acquisition of specific technical skills, some transversal competences will be also developed during the course, like knowledge integration, capacities of analysis, sinthesis, oral, visual and written comunication. The works will be presented to the whole group and a global discussion will perform as an oral evaluation.

LEARNING OBJECTIVES OF THE SUBJECT

1.Identify decisional variables in a real problem
2.Identify the relevant a priori knowledge for decision-making
3.Elicit the relevant implicit knowledge for the target problem
4.Design information extraction procedures from data, which take into account the elicited a priori knowledge
5.Apply the information extraction processes to a real case and present the final results

STUDY LOAD

Type	Hours	Percentage
Hours large group	13,5	36.00
Self study	24,0	64.00

Total learning time: 37.5 h

CONTENTS

Introduction

A priori knowledge

Description:
Concept
Representation formalisms
How to introduce it in data analysis?
Case: Analysis of mental health systems from the WHO
Case: Identification of typical situations in wastewater treatment plants

Implicit knowledge

Description:
Concept
Impact of implicit knowledge in Knowledge Discovery
Tools to elicit implicit knowledge
Case: Efects of elecktroconvulsive therapy over reaction times in schyzophrenia
Case: Dependency Law in Catalunya

ACTIVITIES

Reading, comprehension, analysis of a text about decision-making. Fill-in a brief form

Specific objectives:
1, 2

Related competencies :
CTR6. REASONING: Capacity for critical, logical and mathematical reasoning. Capability to solve problems in their area of study. Capacity for abstraction: the capability to create and use models that reflect real situations. Capability to design and implement simple experiments, and analyze and interpret their results. Capacity for analysis, synthesis and evaluation.
CTR4. INFORMATION LITERACY: Capability to manage the acquisition, structuring, analysis and visualization of data and information in the area of informatics engineering, and critically assess the results of this effort.

Full-or-part-time: 3h 30m
Laboratory classes: 0h 30m
Self study: 3h

Development of a case

Specific objectives:
1, 2, 3, 4, 5

Related competencies :
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CTE9. Capability to apply mathematical, statistical and artificial intelligence methods to model, design and develop applications, services, intelligent systems and knowledge-based systems.
CDG1. Capability to integrate technologies, applications, services and systems of Informatics Engineering, in general and in broader and multicisciplinary contexts.
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CB7. Ability to integrate knowledges and handle the complexity of making judgments based on information which, being incomplete or limited, includes considerations on social and ethical responsibilities linked to the application of their knowledge and judgments.
CB8. Capability to communicate their conclusions, and the knowledge and rationale underpinning these, to both skilled and unskilled public in a clear and unambiguous way.

Full-or-part-time: 20h
Laboratory classes: 5h
Self study: 15h

Final presentation of developed cases and common discussion of all the works developped

Specific objectives:
5

Related competencies :
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CTE9. Capability to apply mathematical, statistical and artificial intelligence methods to model, design and develop applications, services, intelligent systems and knowledge-based systems.
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Full-or-part-time: 4h 30m
Laboratory classes: 1h 30m
Self study: 3h

Presentation, analysis and discussion of illustrative cases

Specific objectives:
1, 2, 3, 4

Related competencies :
CG8. Capability to apply the acquired knowledge and to solve problems in new or unfamiliar environments inside broad and multidisciplinary contexts, being able to integrate this knowledge.
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Full-or-part-time: 8h
Theory classes: 1h 30m
Laboratory classes: 3h 30m
Self study: 3h

Introduction

Full-or-part-time: 1h 30m
Theory classes: 0h 30m
Laboratory classes: 1h

GRADING SYSTEM

The final qualification is composed by 4 components:
*) Q: questionaire about the reading of a text about decision-making
*) P: practical work over a real case (includes public presentation)
*) C: participation in classes

The final score is obtained as:

N= 0.3 Q + 0.6 P+ 0.10 C

BIBLIOGRAPHY

Basic:
- Health Research Policy and Systems. Health Research Policy and Systems, 2010 8(28):1-16..