Emerging technologies in the information society

Academic Year: (2019 / 2020)   **Review date: 23/04/2020 11:55:13**

Department assigned to the subject:

Coordinating teacher: MORENO LOPEZ, LOURDES

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 2

OBJECTIVES

Generic/Transversal Competences:
- Capacity to analyze and synthesize (PO e)
- Capacity to organize and plan the work (PO d)
- Capacity to manage resources in an efficient way. (PO c e)
- Capacity to put in practice theoretical concepts in different uses cases. (PO c e k)
- Oral and written skills (PO g)
- Working as a team (PO d)

Specific Competences.
1. Cognitive (to know). (PO a, h, j, k)
-   Knowledge on the Natural Language Processing (NLP).
- Knowledge of the Disability and Web Accessibility.
- Knowledge of accessibility barriers in the text content by people with cognitive disabilities.
- Knowledge on the web accessibility standards as WCAG 2.0
- Knowledge on Easy-to-Read and Plain Language:
- Knowledge on the user interface design and inclusive design
- Knowledge of the usability and user experience (UX)
- Knowledge on the web, accessibility, Easy-to-Read, Plain Language and UX guidelines to improve the reliability and understandability.
- Knowledge in the Design of web interfaces to improve the reliability and understandability.

2. Procedural/instrumental (to be able to do). (PO b c e g k)
- Capacity of extracting information through tools.
- Capacity to apply methods text Simplification.
- The ability to use language technology resources.
- Capacity to apply accessibility standards.
- Capacity to apply Accessibility Evaluation methods follow WCAG 2.0 methodology.
- Capacity to analyze and integrate strategies to implement web accessibility, Easy-to-Read, Plain Language and UX guidelines to improve the reliability and understandability.
- Ability to incorporate strategies for web design interfaces to improve the reliability and understandability.
- Ability to develop prototype with the knowledge acquired.
- Ability to study and analyze research articles.
- Capacity to write research papers.
- The capacity to conduct validations through experimental studies using empirical methods.

3. Attitude (Being)
- Ability of working as a multidisciplinary team. (PO d)
- Analyse, evaluate and conclude with the different accessible solutions for a given use case. (PO e h j k)
- Capability of autonomous learning for the professional future in the area. (PO i h k)

Generic/Transversal Competences:
- Capacity to analyze and synthesize (PO e)
- Capacity to organize and plan the work (PO d)
- Capacity to manage resources in an efficient way. (PO c e)
- Capacity to put in practice theoretical concepts in different uses cases. (PO c e k)
- Oral and written skills (PO g)
- Working as a team (PO d)

Specific Competences.
1. Cognitive (to know). (PO a, h, j, k)
-    Knowledge on the Natural Language Processing (NLP).
- Knowledge of the Disability and Web Accessibility.
- Knowledge of accessibility barriers in the text content by people with cognitive disabilities.
- Knowledge on the web accessibility standards as WCAG 2.0
- Knowledge on Easy-to-Read and Plain Language:
- Knowledge on the user interface design and inclusive design
- Knowledge of the usability and user experience (UX)
- Knowledge on the web, accessibility, Easy-to-Read, Plain Language and UX guidelines to improve the reliability and understandability.
- Knowledge in the Design of web interfaces to improve the reliability and understandability.

2. Procedural/instrumental (to be able to do). (PO b c e g k)
- Capacity of extracting information through tools.
- Capacity to apply methods text Simplification.
- The ability to use language technology resources.
- Capacity to apply accessibility standards.
- Capacity to apply Accessibility Evaluation methods follow WCAG 2.0 methodology.
- Capacity to analyze and integrate strategies to implement web accessibility, Easy-to-Read, Plain Language and UX guidelines to improve the reliability and understandability.
- Ability to incorporate strategies for web design interfaces to improve the reliability and understandability.
- Ability to develop prototype with the knowledge acquired.
- Ability to study and analyze research articles.
- Capacity to write research papers.
- The capacity to conduct validations through experimental studies using empirical methods.

3. Attitude (Being)
- Ability of working as a multidisciplinary team. (PO d)
- Analyse, evaluate and conclude with the different accessible solutions for a given use case. (PO e h j k)
- Capability of autonomous learning for the professional future in the area. (PO i h k)

DESCRIPTION OF CONTENTS: PROGRAMME

The syllabus is divided into two main topics with a common goal:
Human Language Technologies and techniques of Natural Language Processing (NLP) that give support to the transformation from the text with accessibility barriers (as difficulty in understanding and readability) in simplified text. Furthermore, standards, methods, and approaches to the design of web interfaces which offer simplified information following web accessibility, user experience (UX) and readable (E2R) guidelines are studied:

- Introduction

* TOPIC 1: Human Language Technologies.
-    Overview of the Natural Language Processing (NLP).
-    Basic tasks of NLP
-    Text classification using machine learning algorithms.
-    Information Extraction: Name Entities Recognition using machine learning algorithms.
-    Text simplification

* TOPIC 2: Accessibility Web. User Experience (UX). Creating user interfaces for presenting simplified

information. This simplified information is the result of the application of NLP techniques such as Text Simplification studied in topic 1.
- Web Accessibility. Standards. WCAG 2.1
- Accessibility guidelines regarding language
- Easy to Read and Plain language guidelines
- User-centered design (UCD) and User Experience (UX)
- Design of web interfaces to improve the readability and understandability

LEARNING ACTIVITIES AND METHODOLOGY

The methodology followed is theoretical and practical:
* The teacher will inform (through the "Aula Global" platform) of the learning plan (learning activities like content, papers to read, etc..) to do in each class.
* Each class will have different format (master class teacher or collaborative group work...) according to the most appropriate learning method.
* The teacher will provide reference articles about the topic of the next class. Students will have to read them prior to class in order to: make a group discussion, write an extended abstract, make a presentation about the article, etc.
* The purpose of paper reading is to review and analyze it, through the student question himself:
  - What problem is solved? Which are the strengths and limitations of the approach?
  - Is the evaluation correct? Are validated the objectives? Why or why not?
  - What approaches used in the reserach work can be applied to other domains?
  - The initial assumptions on which this research is based are valid?
  - Article provides a sufficiently detailed description of the proposed methods so you can replicate it? If not, where I can find additional information?
Additionally, to guide the final work:
  - How I can apply the knowledge of the article on a practical case?
* The final work will be done under the supervision of teachers.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

The assessment of the course is valued through: 1) student participation in class and 2) development of a final project.
* The final project includes two required parts:
1. The creation of a web prototype to present simplified information.
2. Write a paper that describes the proposal development, motivation, state of the art, theoretical approach and case study.

* The final project will be done under the supervision and support of the teachers.
  - Valuation of class participation (1): 15%
  - Valuation of the required final project (2.1. and 2.2.): 85%

In the extraordinary exam, its grade will be the 100%.

BASIC BIBLIOGRAPHY

 - Kraft, Christian User experience innovation: user centered design that works, Safari, 2012

 - Lazar, Jonathan; Feng, Jinjuan Heidi; Hochheiser Harry Research methods in human-computer interaction, John Wiley & sons, 2010

 - Shneiderman, Ben; Plaisant, Catherine Designing the user interface: strategies for effective human-computer interaction, Addison-Wesley, 2010

ADDITIONAL BIBLIOGRAPHY

 - Tractinsky, Noam; Hassenzahl, Marc User experience - a research agenda, Behaviour & Information Technology, , 2006