DEREE COLLEGE SYLLABUS FOR: 3/0/3

ITC 3254 COGNITIVE COMPUTING WITH IBM WATSON
(same as CS 3254)
(Fall 2015)

PREREQUISITES:
CS 1070 Introduction to Information Systems
ITC 2088 Introduction to Programming - **OR** -
CS2179 Business Information Systems

CATALOG DESCRIPTION:
Natural Language Processing with IBM Watson Platform; Business Intelligence; Question answering; Unstructured Information Processing;

RATIONALE:

This course introduces students to IBM Watson platform, an artificially intelligent computer system capable of answering questions posed in natural language, developed in IBM's Deep QA project. The course will cover topics specifically on the Watson system, as well as on more general topics that are relevant to these technologies. Students will have the opportunity to work in teams and develop projects using Watson. The course is suitable for students following the IT or MIS majors as well as students from other disciplines.

LEARNING OUTCOMES:
As a result of taking this course, the student should be able to:

1) Make use of Watson platform and its underlying technologies for natural language processing and question answering in particular.
2) Build a training corpus for Watson.
3) Evaluate the results produced by Watson.

METHOD OF TEACHING AND LEARNING:
In congruence with the teaching and learning strategy of the college, the following tools are used:

- Classroom lectures, discussions, online tutorials, laboratory practical sessions and problem solving.
- Office hours held by the instructor to provide further assistance to students.
- Use of the Blackboard learning platform to further support communication, by posting lecture notes, assignment instruction, timely announcements, and online submission of assignments

ASSESSMENT:

Summative:

Group Project: train Watson system to address a real world problem; application development; report writing	**100%**

Formative:

Coursework	**0%**

The formative "Coursework" aims to prepare students for the project. The summative "Group Project" assesses learning outcomes 1-3.

INDICATIVE READING:

REQUIRED READING:

Notes to be handed out by the instructor.

RECOMMENDED READING:

Manning, C. D., and Schuetze, H. (2003). Foundations of Statistical Natural Language Processing, MIT Press.

Bird, S., Klein, E., Loper, E. (2009). Natural Language Processing with Python, O' Reilly Media.

Jarafsky, D., and Martin, J.H. (2008). Speech and Language Processing, Prentice Hall Series in Artificial Intelligence.

Kibble, R. (2013). Introduction to Natural Language Processing, University of London (http://www.londoninternational.ac.uk/sites/default/files/computing-samples/co3354_ch1-3.pdf)

COMMUNICATION REQUIREMENTS:

Daily access to the course's site on the College's Blackboard CMS. Effective presentation skills using proper written and oral English. Communication and coordination during team activities.

SOFTWARE REQUIREMENTS:

Python, BlueMix, Watson

WWW RESOURCES:

Coursera NLP course: https://www.coursera.org/course/nlp

Coursera NLP course: https://www.coursera.org/course/nlangp

IBM Bluemix: https://console.ng.bluemix.net/home/

https://hbr.org/2012/10/big-data-the-management-revolution/ar

INDICATIVE CONTENT:

1. Unstructured and Big Data in the Business world
2. Introduction to Artificial Intelligence
3. Natural Language Processing Fundamentals
4. Question Answering
5. Introduction to Cognitive Computing and Watson
6. Machine Learning
7. Information Retrieval
8. Knowledge Representation and Reasoning
9. Question Answering
10. Corpus building
11. Building an Application Idea
12. Training Watson
13. Evaluation of the results