Course Syllabi

1. TICS-00073 SEMANTIC WEB
2. 192 credits hours.
3. Bibliography
   - LINKED DATA: EVOLVING THE WEB INTO A GLOBAL DATA SPACE, Tom Heath and Christian Bizer, 2012
   - A Developer's Guide to the Semantic Web, Liyang Yu, 2014
4. Specific Course Information
   a. This course focuses on the standards of the Semantic Web (SW), the principles of Linked Data (LD) and tools. The Semantic Web (SW) is an extension of the World Wide Web to make Internet data can be consumed and understood by machines. Linked data (LD) is structured data that is interrelated with other data built on the SW stack, allowing applications to share information so that computers can This course will feature conventional lectures and hands-on sessions (exercises and a project) as main learning activities. During the course, students apply the knowledge acquired in the hands-on sessions (laboratory), and in the project, which covers the development of a SW application. It is highly recommended that students have previously followed the Knowledge Representation course.
   b. Prerequisites:
      - TICS-00043 COMPUTER GRAPHICS
      - TICS-00070 CURRICULAR CAPSTONE COURSE 1
      - TICS-00040 ENTREPRENEURSHIP AND INNOVATION
      - CSCO-00166 PROFESSIONAL RESPONSIBILITY AND REGULATIONS IN COMPUTER SCIENCE ENGINEERING
      - TICS-00055 PRE-PROFFESIONAL PRACTICES
      - TICS-00038 DATA SCIENCE
5. Learning Objectives of the Course
   a. Get an orientation of the theoretical, methodological, technological and ongoing standardization work supporting the semantic Web.
      - Explain the principles of Linked Data, comparing and applying the main standards of the Semantic Web stack
      - Explain, compare and apply data formatting standards for Semantic Web applications (RDF serializations)
      - Create data sets linked from scratch and store them in a triplet store as
      - Re
      -use existing data sets, both from available triplet storage and through the conversion ("triplication") of existing unlinked data sets
      - Develop a semantic web application that is able to consult different data sets for further analysis
   b. Learning Outcomes
      - Acknowledges the benefits of a semantic-based data model
      - Uses different programming interfaces to generate semantic applications
      - Learn the languages to introduce semantics into documents
      - Know the principles of linked data and existing standards for the generation of a data web
      - It is capable of generating linked data sets and storing them in a triplet database

- Reusing existing data sets using a conversion process ($!triplication$!) of existing unrelated data sets
- Reusing existing data sets using a conversion process ($!triplication$!) of existing unrelated data sets
- It is able to design and implement a semantic web application
- Learn the languages to introduce semantics into documents
- It is capable of generating linked data sets and storing them in a triplet database
- Acknowledges the benefits of a semantic-based data model
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- Uses different programming interfaces to generate semantic applications
- Know the principles of linked data and existing standards for the generation of a data web
- It is able to design and implement a semantic web application

6. Course Topics

- Motivation and introduction to the course
- Introduction to the semantic website and related data
- Resource description framework (rdf)
- Implementation of a programming framework
- Triplification of structured data and access to linked data
- Data subbebide in website pages
- Storages for linked data
- Applications