Z636: Semantic Web

Details below are from the Fall 2014 Syllabus for reference.

Link:  http://info.slis.indiana.edu/~dingying/Z636Fall2014.html

Course Description
The current Web has experienced tremendous changes to connect data, people and knowledge. There are a couple of exciting efforts trying to bring the Web to its full potential. The Semantic Web is one of them which is heavily embedded in the Artificial Intelligence area with the long-term goal to enhance the human and machine interaction by representing data semantics, integrating data silos, and enabling intelligent search and discovery.

This course aims to provide the basic overview of the Semantic Web in particular, and data semantics in general, and how they can be applied to enhance data integration and knowledge inference. Ontology is the backbone of the Semantic Web. It models the semantics of data and represents them in markup languages proposed by the World Wide Web Consortium (W3C). W3C plays a significant role in directing major efforts at specifying, developing, and deploying standards for sharing information. Semantically enriched data pave the crucial way to facilitate the Web functionality and interoperability.

This course aims to provide the basic overview of what the Semantic Web is and how it can be applied. It mainly contains three parts: Semantic Web language, RDF graph database (i.e., RDF triple store), and its applications. The fundamental part of the course is the Semantic Web languages. It starts from XML and goes further to RDF and OWL. The RDF graph database part introduces different APIs of Jena and its reasoners. The application part showcases current trends on semantic applications.

Prerequisites
Basic knowledge of HTML and XML is necessary. Basic knowledge of Java can be helpful.

Course Objectives
This course aims to develop a critical appreciation of semantic technologies as they are currently being developed. At the end of this course, students should be able to

- sketch the overall architecture of the Semantic Web.
- identify the component technologies of the Semantic Web and explain their roles.
- illustrate the design principles of the Semantic Web by applying the technologies.
- understand certain limitations of the Semantic Web technologies, and be aware of the kinds of services it can and cannot deliver.

The course aims are achieved through:

- Lectures covers basic knowledge of the Semantic Web
- Projects applying semantic technologies to concrete problems of information delivery and use
- Assignments of practicing and utilizing key semantic technologies