



Title: **CS 561 Web Data Management**  
 Semester: **Fall 2023**  
 Instructor: **Yannis Tzitzikas**  
 Teaching Assistants:

## Syllabus

### General Objective

The Semantic Web is an evolving extension of the WWW where the content can be expressed not only in natural language (as in the classical Web of documents), but also in formal languages (e.g. RDF/S, OWL) that can be read and used by software agents, permitting them to find, share and integrate information more easily. For achieving the Semantic Web vision, the recent years several technologies have been emerged, many of them are international (W3C) standards. These technologies include: knowledge representation languages (e.g. RDF/S, OWL) and formats for exchanging knowledge, query languages (π.χ. SPARQL), rule languages and inference engines, techniques for constructing mappings for integrating/harmonizing schemas and data, technologies for mining structured knowledge from texts. Moreover the current trend of publishing Linked Data is based these technologies.

This course will allow the students to understand the overall vision, be acquainted with the current technology stack, use these technologies, and connect with the related current research.

### Learning Objectives

At the end of this course, the students should have understood:

- the overall vision of the Semantic Web
- the current technology stack (URIs, XML, RDF/S, SPARQL, Linked Data)
- how one could use these technologies for building something useful

Moreover, at the end of this course the students should have the skills to:

- define and test an ontology
- formulate SPARQL queries
- define schema mappings
- formulate rules for instance matching
- install and use tools for semantic data management
- exploit the query capabilities of SPARQL endpoints for building applications

### Student Duties and Grading

The duties and the grading system will be finalized based on the number and the background of the students that will enroll to this course. In general, the duties include:

- Attendance of lectures (almost obligatory, graded)
- Presentation of papers in the class (one or two papers)
- Assignments (one on paper, two that require using some tools/systems).
- Participation to the project (that includes modeling, programming)
- Successful participation to final (written or take home) examination

A possible (**not finalized**) grading formula:

10% Attendance and Participation  
 10% Assignments  
 30% Papers presentation  
 40% Project  
 10% Final examination (optional)

End of syllabus