Course Syllabus

Course Information

Course:	CS 6315.501
Title:	Semantic Web
Term:	Spring 2017
Dates & Times:	Monday & Wednesday, 7:00pm - 8:15pm, ECSS 2.201

Professor Contact Information

Professor:	Dr. Keven L. Ates
Office Phone:	(972) 883-4523
Email Address:	atescomp@utdallas.edu
Office Location:	ECSS 4.403
Office Hours:	6:00pm - 7:00pm Mon & Wed OR by appointment

TA Contact Information

TA:	TBD
Office Phone:	TBD
Email Address:	TBD
Office Location:	TBD
Office Hours:	TBD

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisites:	A working knowledge of Java and a BSCS degree or equivalent. CS 5343 or equivalent.

Course Description

In the course, we will examine:

1. a brief history of the web and the foundation of the "semantic web" ontology.
2. the Semantic Web stack technologies:
    (1) URIs & namespaces,
    (2) XML & XMLS datatypes,
    (3) RDF, RDF/XML, RDFS, & Individuals, and
    (4) OWL 2.
3. application development using Semantic Web technologies.
4. SPARQL—an RDF query language for heterogeneous data stores.
5. Jena—a Semantice Web API for Java—and discuss the parts of Semantic Frameworks.
6. the OWL dialects Full and DL with a concentration on OWL DL.
7. OWL 2 features and its profiles EL, QL, and RL with a review of Lite.
8. D2RQ and Federation concepts.
9. Semantic Web design patterns.

The class consists of programming assignments, exams, a research presentation and a team project.

Student Learning Objectives/Outcomes
Upon completion of this course the student will:

- understand and describe ontologies
- state the reason for the semantic web and its applicability
- describe RDF and RDFS
- issue SPARQL queries to retrieve data over heterogeneous sources
- understand ontological reasoning
- describe the value of the semantic web versus other federation approaches
- implement a group project leveraging semantic web techniques

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Textbooks and Materials

Required Texts:
"Semantic Web Programming", Hebeler, et al., Wiley, April 2009
"A Semantic Web Primer" (3rd Edition), Antoniou, et al, The MIT Press, 2012

Required Materials:
A computer capable of installing course related applications. The OS may be a current version of Linux, OSX, or MS Windows (7 or higher). Laptops that the student can bring to class are preferred.

Suggested Texts:
"Patterns in Java, Volume 1" (2nd Edition), Grand, Wiley
"Head First Design Patterns", Freeman & Robson, O'Reilly
"Semantic Web for Working Ontologist: Effective Modeling in RDFS and OWL" (2nd Edition), Allemang & Hendler, O'Reilly, 2008

Assignments & Academic Calendar

Academic Calendar (Jan 9 – May 8)

No Classes:
Martin Luther King Day..... Monday, January 16
Spring Break..... Thursday, March 13 – Saturday, March 18

Unit	Topic
1	Introduction to the Semantic Web
2	XML and XML Schema, URIs and Namespaces, Intro to RDF
3	RDF and RDFS, FOAF and VCard
4	RDF tools, DublinCore, SPARQL, Reification
5	Graph Visualization with Gruff, OWL
6	Review, Semantic Wiki
Midterm	In Class: March 1, 7:00pm – 8:15pm, ECSS 2.201
7	More OWL, Ontology Alignment, Protege

8	Semantic Web Application Architecture, Semantic Similarity
9	RDFS Inference, OWL Inference
10	OWL 2 Profiles and Cardinality
11	UML and Design Patterns
12	D2RQ and Federation with Semantic Web
Fall Break	Mon., March 13 – Sat., March 18
Team Project	Due April 7; Presentations April 17 – April 26
Final Exam	In Class: TBD

Class Assignments:
There will be regularly assigned reading and lab assignments. Reading assignments should be done before the class lecture. Lab assignments are graded and require the student to spend time programming or using a computer outside of class. Lab assignments require using a preferred OS: Linux, MacOS, and/or Windows. Other ungraded assignments may be given, but are for the benefit of the student in preparation for exams. **No late work will be accepted! Failure to submit by the assignments due date will result in a ZERO grade for the assignment—no execptions!**

Presentation:
This is an individual effort—each student selects a unique presentation topic. Students will submit a topic and presentation date by the end of the selection due date when the assignment becomes available on eLearning and the instructor initially discusses the presentation requirements in class. Students will submit the presentation on or before the presentation date. More details will be given in the presentation documentation and in class. **Failure to select a topic by the selection due date (not presentation date) will result in a ZERO grade for the presentation—no exceptions!**

Team Project:
This is a team effort, 2-4 students per team. Teams will register their members by the selection due date when the assignment becomes available on eLearning and the instructor initially discusses the project requirements in class. Each team will submit progress reports on a regular basis coving the tasks as given in the project documentation. At the end of the semester you will present your project to the class. More details will be given in the project documentation and in class. **Failure to be on a team by the selection due date will result on a 10 point deduction for the project—no exceptions!**

Submissions:
Assignments should be submitted using your eLearning account. At a minimum, each submission should contain the following files:

1. A copy of the source code
2. A report detailing the assignment's code and results. The report should include the following:
    a. A description of the assignment with a synopsis of the solution including a high-level pseudocode design
    b. Any additional reporting items such as sample input, output, plots, and diagrams
    c. A conclusion including any notable observations, errors, and/or special conditions

Course Tools:
Java: All of the programs we write this semester will be in Java. It is essential that the TA can run your programs on his or her system. The student may choose any suitable IDE for development, but Eclipse is recommended.
Help Desk: For help with issues regarding your computer, UTD maintains a walk-in help desk. Visit their Web site for details: http://www.utdallas.edu/ir/helpdesk/
Tutoring: For general programming assistance, a lab is setup each semester. The schedule usually comes out a couple of weeks after the semester begins. In addition, it is part of the TA's job to help you, so please feel free to engage with him or her at any time. And, of course, I'll be happy to help as well.

Grading Policy
Lab Assignments: 20%
Research Project or Case Study: 10%
Team Project: 20%
Midterm Exam: 25%
Final Exam: 25%

Letter Grade Scale (minimum grade required):
A: 90, B: 80, C: 70, D: 60, F: 0

NOTE: Attendance will affect your grade and you may be dropped from the class. **See Class Attendance below.**

Course & Instructor Policies

Make-up Exams:
There will be no make-up exams unless previously requested and approved by the instructor before the standard exam. Make up exams are more difficult than the standard exam.

Extra Credit:
There will be no extra credit assignments. Extra credit work may be present on some assignments, presentations, and team projects.

Late Work:
No late work will be accepted! No exception!!! **A ZERO will be assigned to any work not submitted by its due date.**

Class Attendance:
Required! Class participation is critical. Value added exam material is discussed in class. If a student does not attend class, there are adverse consequences. **Three (3) consecutive absences will result in a grade drop of one letter grade. Four (4) consecutive absences will result in an F letter grade.**

Classroom Citizenship:
Difficulties may arise between students as well as student and instructor. However, respect for each other is necessary at all times to maintain a productive learning environment. See below for links to more related policies.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.