

# Syllabus

## COEN 396 Semantic Web Department of Computer Engineer Santa Clara University

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Course website:  
Office Hours:

Spring Quarter 2014  
Email address: [mwang2@cse.scu.edu](mailto:mwang2@cse.scu.edu)  
<http://www.cse.scu.edu/~mwang2/semantic/>  
Monday 9:00-10:00pm

### Course Description

Introduction to semantic web for inclusion of semantic content in web pages or special domain documents such that make semantic searching (instead of pure keyword searching) possible. Subjects include XML, RDF, OWL, SPARQL, logical, ontology, linked data, semantic extraction, tagging automation, semantic inference, and search optimization.

### Prerequisites

Cloud Computing (COEN296).

### Required Textbooks

1. "A Semantic Web Primer, 3<sup>rd</sup> Edition", by Grigoris Antoniou, Paul Groth, Frank van Harmelen and Rinke Hoekstra, ISBN: 978-0262018289. The MIT Press 2012
2. "Semantic Web for the Working Ontologist, Effective Modeling in RDFS and OWL, 2<sup>nd</sup> Edition", by Dean Allemang and James Hendler, ISBN: 978-0123859655. Morgan Kaufmann 2011

### References

1. "Google Semantic Search: Search Engine Optimization (SEO) Techniques That Get Your Company More Traffic, Increase Brand Impact, and Amplify Your Online Presence", by David Amerland ISBN: 978-0789751348, Que Publishing 2013
2. "Learning SPARQL" by Bob DuCharme, ISBN: 978-1449306595, O'Reilly 2011
3. "Linked Data (Synthesis Lectures on the Semantic Web: Theory and Technology)" by Tom Heath, Christian Bizer and James Hendler, ISBN: 978-1608454303, Morgan & Claypool Publishers 2011
4. "A Developer's Guide to the Semantic Web" by Liyang Yu, ISBN: 978-3642159695, Springer; 2011
5. "Programming the Semantic Web", by Toby Segaran, by Colin Evans and Jamie Taylor, ISBN: 978-0596153816, O'Reilly 2009

6. "Semantic Web Programming" by John Hebler, Matthew Fisher, Ryan Blace and Andrew Perez-Lopez, ISBN: 978-0470418017, Wiley 2009

### Course Objectives

1. To learn advanced and cutting edge state-of-the-art knowledge and implementation in semantic web.
2. To read and understand research publications in the technical area of semantic web, beyond that of the traditional textbook level.
3. To conduct independent project and to equip for scholarly research in semantic web.

### Expected Learning Outcomes

1. Demonstrate the knowledge of XML, RDF, OWL, logical, ontology, linked data, etc. for semantic web modeling.
2. Demonstrate the knowledge of SPARQL and search optimization for semantic searching on web.
3. Practice examples of semantic web programming and open source semantic web tools, and implement example semantic web applications.
4. Read current research papers and implement example research group project in semantic web.
5. Explore the next generation of semantic extraction, tagging automation, semantic inference, search optimization, etc.
6. Explore other advanced topics if time permits.

### Grading Policy

Course grade is determined based on the total score (maximum 1100 points + up to 200 optional bonus points for extra work) from:

1. Mid-term and final exams of 200 points each (close book with one A4 note, no sitting together, no wireless connection.) Makeup exams (must have a very good reason) are much difficult than normal exams.
2. Two programming assignments of 200 points each (late penalty: 30 points/day.) Makeups are more difficult too.
3. A group (2-3 people in a team) programming term project of 300 points (late penalty: 60 points/day.) No makeup is allowed.
4. Bonus assignments will be assigned at each week with 20 points each. Due before next lecture begin by email to me with title "cs921 bN" (where N can be 2, 3,..., 10) and cc to the grader. The solution for bonus assignments will be posted on my protected web page. Please read solutions of bonus assignments before asking questions. No late work accepted for bonus assignments. 75-80% of exam questions are similar to bonus assignments.
5. Class average targeted at **A-**.

Table 1: Grade-score table

1200	1000	950	900	850	800	750	700	650	0
-	-	-	-	-	-	-	-	-	-
1300	1199	999	949	899	849	799	749	699	649
A+	A	A-	B+	B	B-	C+	C	C-	F

**Course Schedule** (Monday 7:00pm-9:45pm)

Table 2: Course Schedule

#	Week	Readings	Remarks
1	1/6	introduction	
2	1/13	XML	
3	1/20	RDF	submit due 1/20
4	1/27	logic and ontology	
5	2/3	OWL	program #1 due 2/9
6	2/10	linked data	
7	2/17	research procedure	program #2 due 2/23
8	2/24	SPARQL	
9	3/2	semantic extraction	
10	3/3		mid-term exam 3/3
11	3/10		problem due 3/10 group & topic due 3/14
12	3/17	tagging automation	paper presentation 3/17
13	3/31	semantic inference	proposal due 3/31
14	4/7	search optimization	
15	4/14		final 4/14
16	4/21	evaluate	project defense 4/21

**Reminder**

- No cheating, and no register complaint without talking to me first.
- No incomplete. No sit-in or audit the class except formally registered.
- Read files under /home/mwang2/tips for help.
- Handouts, assignments, and solutions will be posted on the web. You should check the class web site at least once a week (and don't forget to refresh the webpage to get the latest versions). You are responsible for printing and bring the handout to the class if you prefer printed pages.
- Office hours: Monday 9:00pm-10:00pm.

**Honor Code**

All students taking course in the school of engineering agree, individually and collectively, they will neither give nor receive unpermitted aid in examinations or other course work that is to be used by the instructor as a basis of grading.