



## COURSE SYLLABUS

# Information Architecture and Semantic Technologies, 6 credits

*Information Architecture and Semantic Technologies, 6 högskolepoäng*

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<b>Course Code:</b> TSTS26	<b>Education Cycle:</b> Second-cycle level
<b>Confirmed by:</b> Dean Mar 1, 2016	<b>Disciplinary domain:</b> Technology (95%) and social sciences (5%)
<b>Valid From:</b> Aug 1, 2016	<b>Subject group:</b> DT1
<b>Version:</b> 1	<b>Specialised in:</b> A1F
<b>Reg number:</b> JTH 2016/1166-313	<b>Main field of study:</b> Informatics

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### Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding

- display knowledge of concepts of information needs, information models, semantic relationships
- demonstrate comprehension of information modelling
- show familiarity with semantic techniques for information structuring and linking open data
- display knowledge

Skills and abilities

- demonstrate skills of creating information models and categorization of information
- demonstrate skills of designing user-friendly navigation in an information product
- demonstrate the ability to use existing vocabularies and shared datasets in an information product
- demonstrate skills of using semantic standards to create a conceptual model

Judgement and approach

- demonstrate the ability to choose an applicable method for modelling and structuring information in a given project

### Contents

The course details the role of information architecture as a meaning-making structure, and it provides a framing for the systemic design of information products for digital environments. The experience of information navigation should be coherent for different applications and systems. The course explains details methods and techniques for modelling and structuring information. Standard vocabularies, schemas, and data sources are described, including FOAF, SIOC, SKOS, and DBpedia. When creating an information place, it can be advantageous to link to datasets available on the web. Linked data is introduced as a means to enrich the information architecture of a digital product. This allows for richer semantic description to be included in an application

and used in a machine-processable way. The course describes semantic modelling with RDF(S), querying RDF datasets with SPARQL, and embedding snippets of semantic data into HTML pages with RDFa. The evolving semantic web and OWL ontologies are introduced as well. When semantics is attached to information, it becomes knowledge resulting in the potential to generate actions. Knowledge modelling is the next step in providing more intelligent and smart applications, e.g. being able to adapt, gather information from other sources and give recommendations. To this end, semantic technologies are introduced for knowledge modelling and sharing.

The topics covered in the course include:

- information needs, information modelling and structuring
- content categorization, tagging, and metadata thesauri, and vocabularies
- tagging and metadata
- information navigation system, search systems, and content indexing
- concepts, semantic relationships and conceptual modelling ontologies
- information navigation system, search systems and content indexing
- conceptual modelling and knowledge modelling
- semantic technologies for knowledge modelling, including XML, RDF(S), SPARQL, OWL
- knowledge and information sharing, and linking open data
- standard vocabularies, schemas, and linking open data
- modelling data with RDF(S)
- XML, HTML and RDFa tags
- querying RDF datasets with SPARQL
- the evolving semantic web and OWL ontologies

### **Type of instruction**

The course consists of lectures and laboratory work.

The teaching is conducted in English.

### **Prerequisites**

Passed courses at least 90 credits within the major subject in Computer Engineering, Electrical Engineering (with relevant courses in Computer Engineering), Informatics, Computer Science, Interaction Design (with relevant courses in web programming), and completed course User Experience Design, 6 credits. Proof of English proficiency is required (or the equivalent).

### **Examination and grades**

The course is graded 5,4,3 or Fail.

The final grade will only be issued after satisfactory completion of all assessments.

The final grade for the course is based upon a balanced set of assessments.

Registration of examination:

Name of the Test	Value	Grading
Written examination <sup>†</sup>	3 credits	5/4/3/U
Laboratory work	3 credits	5/4/3/U

<sup>1</sup> Determines the final grade of the course, which is issued only when all course units have been passed.

### **Course literature**

Information Architecture: For the Web and Beyond by Louis Rosenfeld, Peter Morville, Jorge Arango, 4th Ed., O'Reilly Media, 2015.

The Social Semantic Web by John G. Breslin, Alexandre Passant, Stefan Decker, Springer, 2009.

The literature list for the course will be provided one month before the course starts.