ID2208 Programming Web-Services 7.5 credits

Programmering av Web-tjänster

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for ID2208 valid from Spring 2015

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Specific prerequisites

- Computer Science courses 30 hp
- Operating Systems courses 7,5 hp
- Computer Programming courses 7,5 hp
- English "level B" (from Swedish Gymnasium) or similar

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The course explores Web services from two perspectives:

- as a technology designed for publishing software services to the Internet.
- as a general-purpose architecture that triggers a fundamental shift in the way that all distributed systems are created.

The main goal of the course is to give students knowledge about basic methods and techniques in Web services and to provide an insight into current and future directions of the area.

During the course students should learn:

1. What is Web services and Service Oriented Architecture. This means that students should understand what Web services offer as a new and evolving paradigm for building distributed applications.
2. What are main Web services standards. This means that students should understand principles of Web service messaging, description and discovery that enable any organization or individual to make its digital assets available.
3. What are basic components of Web services technology that are above the messaging, description and discovery. This means that students should learn about methods of Web service coordination, composition and security and policy as well as dealing with states in Web services.
4. How to utilize semantics in Web services. This means that students should learn about principles of semantic Web services.
5. Understand ethical aspects and importance of sustainability in developing software services.
6. Get experience in reporting and discussing results of the course homework and project both in oral and written forms.

The course also includes a seminar as a part of the Software Engineering of Distributed Systems master program. The intention of the seminar is to put the course into the context of the software services research in general and into the context of the master program in particular.

Course contents

Introduction and basic concepts of Web services. Basics of markup languages and XML. XML messaging (SOAP). Web Service description (WSDL). Web Service discovery (UDDI). WS-Policy description. Web services coordination (WS-Coordination and WS-Transaction). Web Service composition methods (BPEL4WS). Web services security. Semantic Web Services (RDF and OWL-S). Web services and stateful resources. Future trends. Practical part of the course includes exercises and a project involving implementation of Web services

Course literature

Textbook for the course:

Stive Graham, Doug Davis, Simeon Simeonov, Glen Daniels, Peter Brittenham, Yuici Nakamura, Paul Fremantle, Dieter König and Claudia Zentner. "Building Web Services with Java: Making sense of XML, SOAP, WSDL and UDDI", Second Edition, Sams Publishing, ISBN 0-672-32641-8 (available in the Kista Electrum book store)

Lecture notes

Recommended Reading:

The following sources are recommended to obtain a deeper understanding of the subject.

- H. M. Deitel at al. Web Services. A Technical Introduction. Pearson Education. 2003
- E. Cerami. Web Services Essentials. O'Reilly and Associates.2002.
- R. Schmelzer et al. XML and Web Services, Sams, 2002
- G. Glass. Web Services. Building Blocks for Distributed Systems. Prentice Hall. 2002
- G. Alonso. Web Services. Concepts, Architectures and Applications. Springer, 2004
- Allemang, D., Hendler, J. (2011). "RDF –The basis of the Semantic Web. In: Semantic Web for the Working Ontologist (2nd Ed.)". Morgan Kaufmann
- "XML and Semantic Web W3C Standards Timeline". 2012-02-04.

Additional articles in the curriculum may be added during the course.

Examination

- ANN1 - Assignment, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Written examination (TEN1 4.5 hp)

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.