



KURSPLAN

Cloud Computing and Data Analytics, 6 högskolepoäng

Cloud Computing and Data Analytics, 6 credits

Kurskod:	TCCR26	Utbildningsnivå:	Avancerad nivå
Fastställd av:	VD 2016-03-01	Utbildningsområde:	Tekniska området (95%) och samhällsvetenskapliga området (5%)
Gäller fr.o.m.:	2016-08-01	Ämnesgrupp:	DT1
Version:	1	Fördjupning:	A1N
Diarienummer:	JTH 2016/1165-313	Huvudområde:	Informatik

Lärandemål

After a successful course, the student shall

Kunskap och förståelse

- display knowledge of cloud-based architectures and cloud services
- display knowledge of the basic MapReduce framework, especially Hadoop
- display knowledge of the fundamental tasks in data mining, i.e., classification, regression, clustering and association rules
- display knowledge of the phases in a data analysis project, i.e. preprocessing, modeling and evaluation
- show familiarity with key research directions in data mining and machine learning

Färdighet och förmåga

- demonstrate the ability to use a software tool for all parts of a data analysis project; i.e., preprocessing, modeling and evaluation
- demonstrate the ability to identify and apply a suitable technique based on a problem description

Värderingsförmåga och förhållningssätt

- demonstrate an understanding of how data analysis can be used as a tool in to support business and technical decision-making

Innehåll

The exponential growth of the digital universe, particularly in the form of storage and computing power in recent decades, enables companies to accumulate huge amounts of data at moderate cost. Accompanying this technological shift is a widespread realization that collected data contain potentially valuable information. Exploiting this stored data, in order to extract useful and actionable information, is the overall goal of the generic activity termed data analytics. The course includes the following elements:

- Basics of cloud architecture,
- Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS)

- The MapReduce framework, especially Hadoop
- Fundamental tasks in data mining, i.e., classification, regression, clustering and association rules
- Basic machine learning techniques for classification, regression, clustering and association rules
- Organization of a data mining project, i.e., preprocessing, modeling and evaluation
- Software tools for data analytics
- Data analytics applied in different business domains
- Research directions in data mining and machine learning

Undervisningsformer

The course consists of lectures, seminars and assignments with tutoring.

Undervisningen bedrivs på engelska.

Förkunskapskrav

The applicant must hold the minimum of a bachelor's degree (ie. the equivalent of 180 ECTS credits at an accredited university) with 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) or equivalent. Proof of English proficiency is required (eller motsvarande kunskaper).

Examination och betyg

Kursen bedöms med betygen 5, 4, 3 eller Underkänd.

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

Poängregistrering av examinationen för kursen sker enligt följande system:

Examinationsmoment	Omfattning	Betyg
Skriftlig tentamen ¹	3 hp	5/4/3/U
Laborationer	3 hp	U/G

¹ Bestämmer kursens slutbetyg vilket utfärdas först när samtliga moment godkänts.

Kurslitteratur

Architecting the Cloud: Design Decisions for Cloud Computing Service Models (SaaS, PaaS, and IaaS) by Michael J Kavis, 2014.

Tan, Steinbach & Kumar (2005), Introduction to Data Mining, ISBN: 978-0321321367, Pearson
 Linoff & Berry (2011), Data Mining Techniques: For Marketing, Sales, and Customer Relationship Management, 3rd edition, ISBN:978-0470650936, Wiley.

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