**Kursnamn**

**Applied Cloud Computing**

**Omfattning (högskolepoäng)**

5 hp

**Tidsperiod** January 2016

Course period

**Antal platser** 20

Maximum number of participants

**Undervisningsspråk** English

Language of instruction

Kursens syfte samt motivering till varför den bör vara fakultetsgemensam (max 150 ord)

Cloud computing (CC) is an emerging technology that holds the potential to dramatically change the way we conduct computational experiments in computational science and engineering (CSE), facilitating software development, sharability and reproducibility of results. One of the promises of CC is to bring more power to the scientist using computations, without requiring extensive computer science training. CC forms the technical foundation for modern data analytics pipelines. This course will introduce cloud computing with an emphasis on its practical use and application to CSE problems and on the key differences and opportunities compared to e.g. use of traditional high-performance computing resources. The course should be of interest to a wide range of students, ranging from applied mathematics to physics and biology where computational modeling is a part of the research.

Kursinnehåll, kursens uppläggning samt examinationsform (max 150 ord)

Contents, study format and form of examination

The course will be given on intensive format, to avoid collisions with teaching and to be able to provide significant infrastructure resources.

Content:

An application oriented introduction to cloud computing. Basics of Service Oriented Architectures (SOA). Basic concepts of cloud computing such as virtualization and the service layers IaaS, PaaS and SaaS, dynamic provisioning, elasticity. Practical use of available public and private cloud stacks. Introduction to cloud security. Task based programming in cloud environments, distributed task queues such as Celery. Message brokers such as RabbitMQ.

Examination: Participation in literature seminar, completion of mandatory computer labs and a small software project (that can be tailored to fit the students research interests).

Målgrupp/er (specifera ämnen/inriktningar) samt rekommenderade förkunskaper

Target group/s (specify, if possible, subject/specialization) and recommended background

PhD students in all fields of the Faculty where simulations and/or data analysis are an integral part of the research. Recommended prerequisites are practical experience of computer programming on an advanced level, preferably in Python or Java.
The following background will enhance the experience, but not a strict requirement:
Scientific computing basic course. Courses in Parallel computing, distributed systems and Web applications.

Huvudansvarig institution
**Information Technology**  
Department with main responsibility

Andra inblandade institutioner (specifiera hur).
Other departments involved (specify how).
The Department of Computing Science, Umeå University (as part of the eSSENCE collaboration). Umeå will contribute with CS foundations of CC. Hewlett Packard (HP). As part of a strategic collaboration between Campus Polacksbacken and HP, HP will contribute with guest lectures and material. Potentially also project and internships.

Kontaktpersoner (namn, e-postadress)
Contact persons (name, e-mail address)
Lektor Andreas Hellander, andreax.hellander@it.uu.se

Anmälan om kursdeltagande till
Application from course participants should be sent to
Andreas Hellander, andreas.hellander@it.uu.se

Senast 2015-11-30
Not later than