Reg No: DVAD42/20191

Faculty of Health, Science and Technology
Computer Science

Syllabus

Load Balancing for data-center networks

Course Code:	DVAD42
Course Title:	Load Balancing for data-center networks *Lastbalansering i datacenternät*
Credits:	1.5
Degree Level:	Master's level
Progressive Specialisation:	Second cycle, has only first-cycle course/s as entry requirements (A1N)

Major Field of Study:
DVA (Computer Science)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2018-08-27, and is valid from the Spring semester 2019 at Karlstad University.

Prerequisites
Computer Science 30 ECTS credits or three years of work experience, and Introduction to Dataplane Programming DVAD41, or equivalent. Upper secondary English 6 or B, or equivalent.

Learning Outcomes
Upon completion of the course, students should be able to:
- give an account of basic principles and concepts of Data Center networks,
- give an account of alternative approaches regarding load balancing and routing for Data Center networks,
- explain domain-specific concepts related to data plane programming regarding load balancing for Data Center networks,
- implement simple data-plane load balancing in P4.

Content
The primary focus of the course is on recent developments that apply the concept of programmable data planes to the load-balancing problem. Data Center networks and their implications for the routing and load-balancing approaches are treated. Several load balancing strategies are studied in more detail such as Equal Cost Multipath Routing (ECMP), Conga and Hula. Finally, future usecases such as load balancing in data centre networks with cross-layer information are treated.

Reading List
See separate document.

Examination
Assessment is based on individual hand-in assignments and active participation in discussions.

Grades
One of the grades Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course. Engineering students are awarded one of the grades Pass with Distinction (5), Pass with Some Distinction (4), Pass (3) or Fail (U) is awarded in the examination of the course.

Quality Assurance
Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
DVAD42 cannot be included in the same degree programme as DVAD40.

The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.