

Course number: CSC890

Course title: Special topic on cloud and distributed computing

Number of credits: 3

Prerequisite: A grade of C or better in CSC415 or consent of instructor.

Catalog description: Introduction to important concepts including public/private/community cloud, infrastructure as a service, platform as a service, and software as a service; introduction to virtualization at the level of server, network, storage and operating system; Hands-on experience with public clouds such as the Amazon cloud and open source platforms for cloud computing (e.g., Open Stack).

Teaching/learning methods: lectures, student presentations and hand-on labs

Main learning objectives:

- Obtain a basic understanding of important topics in cloud computing such as virtualization at the levels of servers, networks, storage and operating systems
- Gain hands-on experience through working with Open Source cloud computing software frameworks such as Open Stack
- Exposure to advanced techniques such as Hypervisor

Main topics:

1. Introduction to cloud computing
 - a. Public, private, and community cloud
 - b. Infrastructure, platform, and software as a service
2. Introduction to virtualization
 - a. Server virtualization: processor, memory, I/O and operating system
 - b. Network visualization: Ethernet switches, network partitioning, and software switches
 - c. Storage virtualization: storage models, virtualization, data protection and compression
 - d. Operating system virtualization: process virtualization and operating system containers
3. A review of open source projects
4. Introduction to the architecture and implementation of Hypervisor

Method of evaluation:

Student learning will be evaluated based on the following components:

- Project assignments
- Term project
- Research paper annotation and presentation

Reading materials:

- Textbook: TBD
- A combination of book chapters and research papers.

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