

Pre-Requisite Modules code(s)	Co-Requisite Modules code(s)	ECTS Credits	Module Code	Module Title
		5	CMPU3007	Cloud Computing

8.5.2. Cloud Computing

Module author: Paul Doyle

Module Description:

This module looks at the history and evolution behind cloud computing followed by a review of the latest technologies within it. This module is designed to provide the student with both a practical and theoretical understanding of existing cloud systems and their underlying technologies. The technologies focused on will include grid computing, virtualisation, distributed computing, cloud storage, security within the cloud in addition to reviewing a number of existing cloud environments.

Module aim

The aim of this module is to provide the learner with both a theoretical and practical understanding of the technologies used to enable Cloud Computing.

Learning Outcomes:

On completion of this module, the learner will be able to

- Demonstrate an understanding of the fundamentals of Cloud Computing
- Demonstrate an understanding of the evolution of Cloud Computing technologies
- Demonstrate a practical understanding of cloud technologies within a laboratory environment.
- Configure basic infrastructural components used within the cloud
- Critically analyse different methods for implementing Cloud solutions

Learning and Teaching Methods:

The course delivery involves a combination of lectures and labs. Students will be expected to put into practice some of the module concepts by interacting with existing public cloud infrastructures.

Module content:

- What is cloud computing?
- Classifications of Clouds
- Evolution of Clouds
- Technologies within the cloud
- Virtualisation
- Storage and Security
- Hadoop
- Case Studies of Commercial Clouds (AZURE, Google APPS, Amazon EC2, OpenStack)

Module Assessment

Assessment will be through a combination of continuous assessment and a written exam.

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Marks will be allocated as follows

- Continuous Assessment (30%)
- Written Exam (70%)

Written Exam (70%): The written exam will be conducted under normal DIT Exam regulations and will be based on the theory covered during lectures.

Continuous Assessment (30%): The CA elements of the course will be based on the implementations of basic cloud technologies.

Essential Reading:

Velte/Elsenpeter 2009, Cloud Computing A Practical Approach, McGrawHill

Rosenberg/Mateos 2010, The Cloud at your service, Manning

Mather/Kumaraswamy/Latif Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance (Theory in Practice) 2009, O'Reilly Media

George Reese, 2009, Cloud Application Architectures: Building Applications and Infrastructure in the Cloud, O'Reilly

Supplemental Reading:

Armbrust, 2009, Above the clouds: A Berkeley view of Cloud Computing,UCB/EECS

Kesselman/Foster, 1998, The Grid: Blueprint for a new computing infrastructure, Morgan Kaufmann Publishers

Web references, journals and other:

<http://aws.amazon.com/ec2/>

<http://www.ibm.com/ibm/cloud/>

<http://code.google.com/appengine/>

<http://www.microsoft.com/windowsazure/>

<http://www.grid.ie/>

<http://www.openstack.org/>

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Further Details:

This module will be taught over one semester, with four contact hours per week; 2 lectures, 2 laboratory practical hours.

The laboratory requirements for this module are such that students will require administration access to hardware systems in a controlled way such that they will not interfere with existing institute services.

Date of Academic Council approval