1. **Title of the module**

COMP5810 (CO581) - An Introduction to Computer Systems

1. **School or partner institution which will be responsible for management of the module**

School of Computing

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 5

1. **The number of credits and the ECTS value which the module represents**

15 credits (7.5 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Autumn or Spring

1. **Prerequisite and co-requisite modules**

None

1. **The programmes of study to which the module contributes**

Year in Computing

1. **The intended subject specific learning outcomes.
On successfully completing the module students will be able to:**

8.1 Describe the architecture of a modern distributed computing application.

8.2 Describe and evaluate the trade-offs involved in developing an application based in the cloud versus on one’s own hardware.

8.3 Describe how networks interact with operating systems and applications to provide cloud infrastructure.

8.4 Configure and monitor IT systems to effectively deliver information and services.

1. **The intended generic learning outcomes.
On successfully completing the module students will be able to:**

9.1 Demonstrate comprehension of the trade-offs involved in design-choices.

9.2 Make effective use of IT facilities for solving problems.

9.3 Manage their own learning and development, through self-directed study and working on continuous assessment.

9.4 Make effective use of a range of tools, such as a web-based and command line monitoring and control systems.

1. **A synopsis of the curriculum**

This module equips students with an understanding of how modern cloud-based applications work. Topics covered may include:

* *A high-level view of cloud computing:* the economies of scale, security issues, ethical concerns, the typical high-level architecture of a cloud-based application, types of available services (e.g., parallelization, data storage).
* *Cloud infrastructure:* command line interface; containers and virtual machines; parallelization (e.g., MapReduce, distributed graph processing); data storage (e.g., distributed file systems, distributed databases, distributed shared in-memory data structures).
* *Cloud concepts:* high-level races, transactions and sequential equivalence; classical distributed algorithms (e.g., election, global snapshot, consensus, distributed mutual exclusion); scheduling, fault-tolerance and reliability in the context of a particular parallelization technology (e.g., MapReduce).
* *Operating system support:* network services (e.g., TCP/IP, routing, reliable communication), virtualization services (e.g., virtual memory, containers).
1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**

Armbrust et al., *A view of Cloud Computing*, CACM, 2010

Leskovec et al, *Mining of Massive Datasets*, 2014, Chapter 2

1. **Learning and teaching methods**

Total contact hours: 25

Private study hours: 125

Total study hours: 150

1. **Assessment methods**

13.1. Main assessment methods

40% two practical assignments (equally weighted)

10% two online quizzes, focused on theory (equally weighted)

50% two-hour examination

13.2. Reassessment methods

Like for like.

1. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 9.1 | 9.2 | 9.3 | 9.4 |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |
| **Private Study** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| **Lectures** | **X** | **X** | **X** | **X** |  |  |  |  |
| **Practical Sessions** | **X** | **X** | **X** | **X** | **X** | **X** |  | **X** |
|  |  |  |  |  |  |  |  |  |
| **Assessment method** |  |  |  |  |  |  |  |  |
| Practical assessments | **X** |  |  | **X** |  | **X** | **X** | **X** |
| Examination | **X** | **X** | **X** |  | **X** |  |  |  |

1. **Inclusive module design**

The School recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:

a) Accessible resources and curriculum

b) Learning, teaching and assessment methods

1. **Campus(es) or centre(s) where module will be delivered**

Canterbury

1. **Internationalisation**

The topics addressed by this module relate to a field which is of international importance, given the global role of computers in today's technological innovation. The topics covered by this module are international in nature, being identical worldwide and independent of traditional spoken language.

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**Revision record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| 23/07/2019 | Minor | Sept 2019 | 13, 14 | No |
|  |  |  |  |  |

Revised FSO Sept 2019