

## Module specification

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Module Code	COM570
Module Title	Cloud, Distributed Architecture and Security
Level	5
Credit value	20
Faculty	FACE
HECoS Code	100734
Cost Code	GACP

## Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BSc (Hons) Computer Science	Core
BSc (Hons) Computer Science with Industrial Placement	Core
BSc (Hons) Cyber Security	Core
BSc (Hons) Cyber Security with Industrial Placement	Core
BSc (Hons) Software Engineering	Core
BSc (Hons) Software Engineering with Industrial Placement	Core
Delivery as standalone module	Option

## Pre-requisites

N/A

## Breakdown of module hours

Learning and teaching hours	15 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	15 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
<b>Total active learning and teaching hours</b>	<b>30 hrs</b>
Placement / work based learning	0 hrs
Guided independent study	170 hrs
<b>Module duration (total hours)</b>	<b>200 hrs</b>

<b>For office use only</b>	
Initial approval date	08/11/2023
With effect from date	Sept 2025
Date and details of revision	
Version number	1

## Module aims

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This module will introduce students to the concepts, principles and technologies of cloud computing, distributed architecture and security. Explore the design principles and challenges associated with cloud computing and distributed systems. Examine the security risks and mitigation strategies in cloud and distributed environments. Investigate various cloud computing models and deployment options. Develop practical skills in designing, implementing and managing cloud-based and distributed systems.

## Module Learning Outcomes - at the end of this module, students will be able to:

1	Identify the fundamental concepts of cloud computing and distributed systems.
2	Investigate distributed system architectures and technologies.
3	Evaluate current topics related to cloud, distributed architecture and security.

## Assessment

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Indicative Assessment Tasks:

*This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.*

The assessment will consist of multiple tasks, typically including:

- analysing a real-world case study involving the implementation of a distributed system in a cloud environment;
- evaluating the architecture, scalability, fault tolerance and security aspects of the system.
- presenting findings and recommendations in a written report or oral presentation;

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1,2,3,	Coursework	100%

## Derogations

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None



## Learning and Teaching Strategies

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In line with the Active Learning Framework, this module will be blended digitally with both a VLE and online community. Content will be available for students to access synchronously and asynchronously and may indicatively include first and third-party tutorials and videos, supporting files, online activities any additional content that supports their learning.

As this module progresses, the strategies will change to best support a diverse learning environment. Initially, the module will start with a heavier reliance on engaging tutor-led lectures, demonstrations, and workshops to ensure that the students get the relevant threshold concepts. As the module continues experiential and peer learning strategies will be encouraged as the students' progress with their portfolio work.

Assessment will occur throughout the module to build student confidence and self-efficacy in relation to cloud, distributed architecture and security solutions.

## Indicative Syllabus Outline

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Yearly content will be updated to represent the most appropriate content for current industry technologies, but a list of indicative topics could include:

- Cloud computing models (IaaS, PaaS, SaaS)
- Cloud deployment models (public, private, hybrid, multi-cloud)
- Benefits and challenges of cloud computing
- Principles of distributed systems
- Client-server architecture
- Distributed storage and databases
- Cloud Infrastructure and Virtualization
- Cloud Security Fundamentals
- Data privacy regulations (example: GDPR)
- Securing cloud-based applications
- Legal and regulatory considerations in the cloud

## Indicative Bibliography:

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Please note the essential reads and other indicative reading are subject to annual review and update.

### Essential Reads

S. Dubey, *Scaling Google Cloud Platform: Run Workloads Across Compute, Serverless PaaS, Database, Distributed Computing, and SRE*, BPB Publications, 2022.

### Other indicative reading

A. Lisdorf, *Cloud Computing Basics: A Non-Technical Introduction*, Apress, 2021.