

Module code: MOD009061	Version: 2 Date Amended: 16/Jul/2026
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1. Module Title
Cloud and IoT

2a. Module Leader
Andrew Moore

2b. School
School of Computing and Information Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	None		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Cloud computing and the Internet of Things (IoT) are reshaping the way modern distributed systems are designed, deployed, and operated, introducing both significant opportunities and new technical challenges for industry. This module develops your understanding of the underlying architectures of cloud and IoT systems, including how heterogeneous devices communicate, how data is generated, transmitted, processed, and stored, and the security considerations that arise across these layers. You will also examine the nature of data acquisition from cloud-based infrastructure (including virtual machines, networked services, and storage systems) and IoT devices such as embedded sensors and smart appliances.

The module further explores the configuration and deployment of cloud and server-based technologies, with a focus on their capabilities, constraints, and appropriate use cases in both development and production environments. Practical work will include the use of virtualisation and containerisation technologies to model scalable systems and to understand how modern distributed infrastructures are provisioned and managed in practice.

6b. Outline Content

- Understanding of IoT technologies such as Modbus, Zigbee and Scada
- Configuration of Cloud technologies for testing and production environments
- Virtualisation using VMware, VirtualBox and Docker
- Knowledge of Cloud technologies and types of cloud
- Types of cloud services:
 - Infrastructure-as-a-Service (IaaS)
 - Platforms-as-a-Service (PaaS)
 - Software-as-a-Service (SaaS)
- Scientific data extraction from well-known cloud services such as Google Drive, Azure and AWS
- Privacy laws
- Understanding of concerns over what data is being stored on you and measures to prevent this
- Tools to extract and examine Cloud and IoT data
- Commandline/PowerShell administration

6c. Key Texts/Literature

The reading list to support this module is available at: <https://readinglists.aru.ac.uk/>

6d. Specialist Learning Resources

- IoT devices that will be examined in our forensic labs, such as Raspberry Pis and smart devices
- Cloud services so data can be extracted from them
- Netlab

7. Learning Outcomes (threshold standards)

No.	Type	On successful completion of this module the student will be expected to be able to:
1	Knowledge and Understanding	Evaluate different types of modern cloud & IoT technologies
2	Knowledge and Understanding	Understand the inner workings and communication technologies of IoT devices
3	Intellectual, practical, affective and transferrable skills	Scientifically extract data from Cloud and IoT devices
4	Intellectual, practical, affective and transferrable skills	Demonstrate how cloud technologies could be configured

8a. Module Occurrence to which this MDF Refers

Year	Occurrence	Period	Location	Mode of Delivery
2026/7	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	Hours	Learning Outcomes	Details of Duration, frequency and other comments
Lectures	12	1-2	Lecture 1 hr x 12 weeks
Other teacher managed learning	24	3-4	Laboratory 2 hr x 12 weeks
Student managed learning	114	1-4	2 hr/week preparation for, and reflection on, laboratories, 40 hrs in total preparing a logbook, 50 hrs in total for background reading and preparation for an in-class test
TOTAL:	150		

9. Assessment for the above Module Occurrence					
The assessment for some modules includes a presentation (see below for details on how this particular module is assessed). We recognise that presenting, especially to a large group, can cause significant anxiety or distress for some students. If this may affect you, please contact your Module Leader or the Disability and Neurodiversity Service as early as possible. We will work with you to consider appropriate reasonable adjustments. Depending on your individual needs, these might include, for example, presenting to a smaller group or presenting only to a member of academic staff.					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	1-2	50 (%)	Fine Grade	30 (%)
In-class test, 1 hour 30 minutes (equivalent to 1500 words)					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	3-4	50 (%)	Fine Grade	30 (%)
Logbook of labs completed with questions and reflection answered (1500 words)					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:

- (a) achieve the qualifying mark for each element of fine graded assessment as specified above**
- (b) pass any pass/fail elements**

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]