Module Definition Form (MDF)

Module code: MOD007355	**Version:** 4 **Date Amended:** 16/Jul/2026

1. Module Title
Introduction to System Architecture and Automation

2a. Module Leader
Erika Sanchez-Velazquez

2b. School
School of Computing and Information Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
4

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	BSc (Hons) Cyber Security BSc (Hons) Computer Networks BSc (Hons) Cyber Security and Digital Forensics		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

The development of large-scale networks within multinational organisations running on multiple servers means that configuring and analysing network systems or servers individually is insufficient to meet the needs of these organisations. Implementation and maintenance of server environments commonly used for web and database hosting are an associated skill that is frequently required by network and sysadmin employers.

This module introduces you to a programming language suitable for both network and server administration. You'll be guided through the development of server systems suitable for use in commercial environments. You'll also consider the needs of a typical organisation from both the networking and cyber security standpoints to develop solutions suitable for use in a business environment.

The knowledge and understanding gained from this module will form the structure on which you can build the sophisticated synthesis techniques required in the second and third year of your studies, preparing you for roles where automation and scalable system management are essential.

6b. Outline Content

Introduction to Python 3

Variables, data structures and control structures

Classes and Object Oriented coding in Python

Python frameworks for networking and cyber security

The server "stack"

Stack components for specific applications

Configuration of a typical server stack

Automation of server maintenance

Automating network analysis and configuration with Python

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Computer lab with access to appropriate network infrastructure to be used for testing automation scripts.

Installed software – Python V3.x, SSH client (Putty), Notepad++, suitable environment for server installation.

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	Demonstrate an awareness of Python programming language data and control structures.
2	Knowledge and Understanding	Define and identify Python programming language libraries for network connectivity and server administration.
3	Intellectual, practical, affective and transferrable skills	Solve network analysis and automation problems using the Python programming language.
4	Intellectual, practical, affective and transferrable skills	Implement Python libraries and tools for displaying network statistics and server status.

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	24	1-4	One two hour lecture per week
Other teacher managed learning	24	1-4	One two hour tutorial per week
Student managed learning	252	1-4	Student managed learning
TOTAL:	300		

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	20 (%)	Fine Grade	30 (%)
In class test					

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	3-4	80 (%)	Fine Grade	30 (%)
Practical project					

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]