



Module Definition Form (MDF)

Module code: MOD007355	Version: 2 Date Amended: 22/Dec/2022
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1. Module Title
Introduction to System Architecture and Automation

2a. Module Leader
Ashim Chakraborty

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 ability to automate network and server administration is a key skill for any networking or cyber security specialist. 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.

You will be introduced to a programming language suitable for both network and server administration. You will be guided through the development of server systems suitable for use in commercial environments. You will 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 foundation knowledge and understanding you develop during 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.

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
2025/6	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					
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]