

## Liverpool John Moores University

Title: Operating Systems  
Status: Definitive  
Code: **5203COMP** (127982)  
Version Start Date: 01-08-2021

Owning School/Faculty: Computer Science and Mathematics  
Teaching School/Faculty: Computer Science and Mathematics

Team	Leader
Carl Chalmers	Y
Nathan Shone	

**Academic Level:** FHEQ5      **Credit Value:** 20      **Total Delivered Hours:** 44  
**Total Learning Hours:** 200      **Private Study:** 156

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	22
Practical	22

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Essay on Operating System Theory and Principles	40	
Portfolio	AS2	Series of individual scripting development tasks	60	

### Aims

*To develop an understanding of different operating systems and their role within IT infrastructure.*

*To become familiar with operating systems through practical exercises and studying theoretical concepts.*

*To gain an understanding of how command-line software is developed.*

*To gain knowledge of how operating system tools may be used for managing systems and networks.  
To appreciate a range of security measures involved in system administration.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Differentiate between the structure, management and maintenance of operating systems.
- 2 Analyse operating systems as effective solutions for different problems.
- 3 Apply command-line tools provided by operating systems and their distributions.
- 4 Demonstrate problem-solving skills to create simple software solutions using command-line scripting.

## **Learning Outcomes of Assessments**

The assessment item list is assessed via the learning outcomes listed:

Essay	1	2
Development tasks	3	4

## **Outline Syllabus**

### *Fundamentals of Operating Systems*

- Processes, Memory, Storage, I/O, File Systems
- Distributed operating systems

### *Command Line*

- Navigating the computer
- Editing documents at the command-line
- Searching for information
- Extracting and manipulating information

### *Elements of Shell Programming*

- Variables
- Redirection and pipes
- Conditionals
- Loops
- Functions
- Shell scripting

### *System Administration*

- Installing and configuring alternative operating systems
- UNIX & Linux system administration
- Network File System (NFS)

### *Page 3 of 3*

- Domain Name Servers (DNS)
- Performance Analysis
- Backups and File System Recovery
- System Security

- *Hypervisors and virtualisation*
- *Containers and isolation*

## **Learning Activities**

Lectures – to introduce the operating system and shell programming theories and techniques.

Tutorial sessions – discussion and tasks covering operating-system concepts.

Lab – practical tasks for students to solve using command-line tools and write their own scripts.

Directed reading – background reading to enable the lab work to be completed.

## **Notes**

Operating systems constitute the backbone of every system management task and knowledge on their structure and use is of high importance for any system/network administrator in modern networked environments. In response to this importance, this module introduces the fundamental aspects of operating systems and further facilitates the basis for system administration.