Module: Operating Systems 361

Module name:	Operating Systems 361
Code:	OPS361
NQF level:	6
Type:	Speciality – Diploma in Information Technology (Networking)
Contact time:	48 hours
Structured time:	6 hours
Self-directed time:	46 hours
Notional hours:	100 hours
Credits:	10
Prerequisites:	OPS 263

Purpose

The course covers how to administer, configure and upgrade Linux systems running one of the three major Linux distribution. How to master the tools and concepts you'll need to efficiently build and manage an enterprise Linux infrastructure. It also covers how to use state-of-the-art system administration techniques in real-life scenarios via practical labs.

Outcomes

Upon successful completion of this module, the student will be able to:

- Demonstrate the ability to evaluate, select, and apply appropriate methods, procedures, or techniques to perform essential Linux commands such as installation, searches and manipulating files.
- Demonstrate the ability to evaluate, select and apply appropriate methods and procedures or techniques to manage boot processes, scheduling jobs, updating the system, monitoring system performance, and managing security.
- Demonstrate the ability to identify, analyse network performance via configuration, monitoring, tunnelling and routing of traffic.
- Demonstrate the ability to configure services such as DNS, shares, SSH and SELinux/AppArmor as well as servers for DHCP and HTTP.
- Demonstrate the ability to manage system storage by using partitions, logical volumes, phsyical volumes, ACLs, quotas and clustering.
- Demonstrate an understanding of VM's and cloud in a Linux environment.
- Demonstrate the ability to evaluate, select and apply appropriate scripting methods or techniques in a Linux environment

Assessment

Assessment is performed using a variety of instruments:

- Continuous evaluation of theoretical work through a written assignment, 1 formative test and a summative test.
- Continuous evaluation of project work, where the student must design, manage and report on the evaluation of testing methodologies and the selection of an appropriate methodology for a given scenario, justifying the choice made with well-formed arguments and evidence.

- Final assessment through an examination.
- The assignments or projects collectively will count 30% of your class mark.
- All tests will collectively account for 70% of your class mark.
- Your class mark contributes 30% towards your final mark for the subject, while the final assessment accounts for 70% of your final mark.

Teaching and Learning

Learning materials

Prescribed books (EBSCO)

- 🕮 ***Linux for beginners the ultimate guide to the Linux operating system***
- 🕮 ***Linux shell scripting with bash.***

Additional material

- 🕮 ***Linux: Shell scripting expert recipes for Linux, Bash and more.***

The teaching and learning activities consist of an amalgamation of pedagogical methodologies including formal lectures on theoretical concepts, lab exercises, and discussions. One compulsory assignment and a project must be completed during this course. The progress made on these assignments and project will guide the class discussion.

Notional learning hours

Activity	Units	Contact Time	Structured Time	Self-Directed Time
Lecture		41.0		15.0
Formative feedback		5.0		
Project	1	2.0		7.0
Assignment	1			3.0
Test	2		4.0	9.0
Exam	1		2.0	12.0
		48.0	**6.0**	**46.0**

Syllabus

- Perform essential Linux commands such as installation, searches and manipulating files.
- Operate running Linux systems by managing the boot process, scheduling jobs, updating the system, monitoring system performance and managing security.
- Manage users and groups by adding/deleting/modifying, configuring LDAP and PAM, modifying user processes and resources.
- Ensure network performance via configuration, monitoring, tunnelling and routing of traffic.
- Configure services such as DNS, shares, SSH and SELinux / AppArmor as well as servers for DHCP and HTTP.
- Manage system storage by using partitions, logical volumes, physical volumes, ACLs, quotas and clustering.
- Configuring a cloud on Linux environment.

- Configuring virtual machines in a Linux environment.