



**Course** Operating System Fundamentals (2014-2015)

**Code / Version** PROG1595 (100)

**Total Hours** 60

**Credits** 4

**PreRequisite(s)**

**CoRequisite(s)**

## Course Description

This course provides the student with exposure to operating system (OS) fundamentals from a technical viewpoint. Topics include setup and configuration of an OS and several services, network fundamentals, file systems, and command line operations. By learning advanced techniques in OS usage and some of the related issues, the student is introduced to many of the functions and features that will be built or interfaced to in subsequent programming courses.

**PLAR Eligible:** Yes

## Course Outcomes

Successful completion of this course will enable the student to:

1. Define an operating system and its major functions
2. Identify sources of operating system software and associated support options
3. Install and configure several operating systems
4. Create users and groups with appropriate permissions
5. Demonstrate the features of a file system
6. Demonstrate the concept of redirection
7. Discuss multi-tasking and demonstrate the management of tasks and services
8. Describe the concept of device drivers and how an operating system manages them
9. Configure a TCP/IP-based local area network
10. Demonstrate the use of shared resources like file folders and printers
11. Install and configure a virtual machine
12. Demonstrate the use of batch files and shell scripts
13. Discuss the purpose of a Web server
14. Install and configure a Web server
15. Create a simple HTML page hosted in a web server

## Unit Outcomes

Successful completion of the following units will enable the student to:

### 1.0 Operating System and Major Functions

- 1.1 Define an operating system
- 1.2 Describe the major functions of an operating system
  - 1.2.1 Hardware (peripheral) support
  - 1.2.2 Memory management
  - 1.2.3 Process/task management
  - 1.2.4 File System support



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- 1.3 Describe a typical sequence of operations during the loading of an operating system
  - 2.0 Sources of Operating System Software and Associated Support Options
    - 2.1 Identify some of the major operating systems
    - 2.2 Explain the licensing models used in operating systems
    - 2.3 Describe how the operating systems are distributed or sold
    - 2.4 List a number of online resources useful to the operating system user and developer
  - 3.0 Operating Systems Installation and Configuration
    - 3.1 Determine the requirements of an operating system
    - 3.2 Install an operating system
    - 3.3 Configure an operating system
  - 4.0 Users and Group Creation
    - 4.1 Describe the purpose of creating users and groups
    - 4.2 Describe the need for permissions to access resources
    - 4.3 Demonstrate the ability to create users and groups
    - 4.4 Demonstrate user access to resources with specific permissions
  - 5.0 Features of a File System
    - 5.1 Create, rename and delete directories and files
    - 5.2 Change the working directory
    - 5.3 Demonstrate the ability to reference files relatively and absolutely
  - 6.0 Concept of Redirection
    - 6.1 Demonstrate redirection and piping with command line utilities
    - 6.2 Create a simple program with standard input and output to demonstrate redirection
  - 7.0 Multi-Tasking and Management of Tasks and Services
    - 7.1 Describe the difference between single tasking and multi-tasking operating systems
    - 7.2 Describe how application programs and services differ, and how they are initiated
    - 7.3 Demonstrate the tools and utilities that are used to monitor tasks and services
  - 8.0 Device Drivers and How an Operating System Manages Them
    - 8.1 Define the concept of device drivers and its benefits to the user and developer
    - 8.2 Describe how devices drivers are loaded in an operating system
  - 9.0 TCP/IP-Based Local Area Network
    - 9.1 Describe Transmission Control Protocol/Internet Protocol
    - 9.2 Define IP addressing and network subnets
    - 9.3 Create a working local area network
  - 10.0 Shared Resources
    - 10.1 Create a shared resource with restricted permissions
    - 10.2 Demonstrate user access to the shared resource based on access permissions
  - 11.0 Virtual Machine
    - 11.1 Install virtual machine software on a host computer
    - 11.2 Install a guest operating system on a virtual machine host
    - 11.3 Configure the virtual machine to run alone, networked with the host only and networked with the external network



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12.0 Batch Files and Shell Scripts

- 12.1 Demonstrate several command-line commands using the Command Prompt (Windows), PowerShell (Windows) and Terminal Session (Linux).
- 12.2 Create command scripts to execute sequences of operations

13.0 Web Server

- 13.1 Explain how a Web server expands the capability of a basic operating system
- 13.2 List several popular Web servers

14.0 Web Server Installation and Configuration

- 14.1 Install and configure the Apache Web server (via XAMP)
- 14.2 Install and configure Internet Information Services
- 14.3 Discuss the concept of a root directory for a Web site, and the default physical locations for Apache and IIS

15.0 HTML Page Hosted on a Web Server

- 15.1 Explain the basic elements of an HTML page
  - 15.2 Demonstrate a simple HTML page hosted on a Web server
  - 15.3 Explain the difference between hosting an HTML page on a Web server, and hosting on a file system
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**Required Student Resources**

Operating System Fundamentals Course Notes  
Online resources from O/S manufacturers

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**Optional Student Resources**

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**Evaluation**

The minimum passing grade for this course is 55 (D).

In order to successfully complete this course, the student is required to meet the following evaluation criteria:

Mid-term Exam	25.00
Final Exam	25.00
5 Assignments	40.00
2 Quizzes	10.00
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	100.00 %

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**Other**

Conestoga College is committed to providing academic accommodations for students with documented disabilities. Please contact the Accessibility Services Office.

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**School** Engineering Technology

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**Date** 2014-08-22

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