CAMOSUN COLLEGE
Trades and Technology
Electronics and Computer Engineering

ELEX 139A
PC Server Fundamentals
W2018

COURSE OUTLINE

The calendar description is available on the web @ http://camosun.ca/learn/calendar/current/web/elex.html

Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

Instructor Information

(a)	**Instructor**	Ian Cameron		
(b)	**Office hours**	TBA		
(c)	**Location**	TEC 211		
(d)	**Phone**	250 370 4439	**Alternative:**	
(e)	**E-mail**	cameron@camosun.bc.ca		

The focus of this course is on Windows Server. The students are introduced to Server installation and management. The students will create a working Client - Server based network. Students will be required to develop and implement a working File System, create user accounts and groups to implement a working domain structure and configure various server roles and services.

Emphasis will be on configuration of the Client – Server environment based on the Microsoft 70-740 Installation, Storage, and computer with Windows Server 2016 exam.

The student will be responsible for keeping up with the required reading and lab exercises.

Upon successful completion of this course a student will be able to:

- identify and install the different server roles;
- describe the operation of server-based networks;
- install and configure network operating systems;
- perform remote server maintenance;
- configure client computers and user accounts;
- configure and apply group policies;
- configure and manage virtual servers and workstations; and
- describe and practice disaster recovery methods for servers.

Required Materials

(a) Text: Online - Testout Windows Server Pro 2016 Course. The information can be accessed through the TestOut (www.testout.com) once the course is purchased.

(b) Access to ELEX 139 Camosun D2L online course materials as required

(c) Student File Share: \\elexsrv1\elexpub\elex 139A

Course Content

WEEK1

1.0 Introduction

1.1 Windows as a Server
1.2 Windows Server 2012 Interface Overview
1.3 Windows Server 2016 Interface Overview

WEEK2

2.0 Server Installation

2.1 Server 2012 Installation
2.2 Server 2016 Installation
2.3 Server Upgrade and Migration

3.0 Server Configuration and Management

3.1 PowerShell
3.2 Server Roles
3.3 Server Core Deployment
3.4 Remote Server Management
3.5 Image Servicing
3.6 Nano Server Deployment

WEEK3

4.0 Networking

4.1 IPv4 Addressing
4.2 IPv6 Addressing
4.3 Windows Firewall
4.4 Advanced Networking

WEEK4

5.0 Server Storage

5.1 Traditional Storage
5.2 VHD Storage
5.3 Storage Pools
5.4 iSCSI Storage
5.5 Data Deduplication

WEEK5

6.0 Hyper-V

6.1 Virtualization Deployment
6.2 Virtual Machines
6.3 Virtual Machine Storage

6.4 Virtual Networks
6.5 Virtual Network Optimization
6.6 Virtual Machine Movement

WEEK6 – Reading Break

WEEK7

7.0 Active Directory

7.1 Active Directory
7.2 Domain Controllers
7.3 Sites
7.4 Organizational Units
7.5 Users Accounts
7.6 Bulk User Operations
7.7 Computer Accounts
7.8 Groups
7.9 Rights Delegation
7.10 Azure AD

WEEK8 – Review / Mid Term Exam

WEEK9

8.0 Group Policy

8.1 Group Policy Foundation
8.2 Group Policy Management
8.3 Password Policies
8.4 Audit Policies
8.5 User Rights Assignment
8.6 Security Options
8.7 Restricted Groups
8.8 Application Restriction Policies
8.9 Group Policy Preferences

WEEK10

9.0 DNS

9.1 DNS Overview
9.2 Name Resolution
9.3 Zone Management
9.4 DNS Records
9.5 DNS Troubleshooting

WEEK11

10.0 File and Share Access

10.1 File Access
10.2 Access-based Enumeration (ABE) and Volume Shadow Copy (VSS)
10.3 SMB Shares
10.4 NFS Shares
10.5 NTFS Permission Troubleshooting

11.0 Print and Document Services

- 11.1 Print Servers
- 11.2 Print Management

WEEK12

12.0 Server Management

- 12.1 Windows Software Update Services (WSUS)
- 12.2 Malware Protection
- 12.3 Windows Server Backup
- 12.4 Windows Server Restore
- 12.5 Performance Monitoring

WEEK13

13.0 DHCP

- 13.1 DHCP Basics
- 13.2 DHCP Exclusions and Reservations
- 13.3 DHCP Centralization
- 13.4 DHCP Troubleshooting

WEEK14

14.0 Containers

- 14.1 Container Overview
- 14.2 Container Host Installation
- 14.3 Container Deployment
- 14.4 Container Management

15.0 High Availability

- 15.1 Network Load Balancing
- 15.2 Network Load Balancing Management
- 15.3 Failover Clustering
- 15.4 Failover Cluster Management
- 15.5 Failover Cluster Role Management
- 15.6 Hyper-V Replication and Migration
- 15.7 Hyper-V High Availability
- 15.8 Storage Replica
- 15.9 Highly Available Storage Spaces

Holidays

Feb 12 - 16 Family Day/ Reading Break (Mon-Fri) – College Closed (Week 6)
March 30 - Good Friday – College Closed (Week 12)
Apr 2 Easter Monday - College Closed (Week 13)

Lab Schedule

In-class Exercise	TestOut Online Labs
Week 1 – Introduction / Navigate Windows Server	1.2.3, 1.3.3
Week 2 – Windows Server Installation – PC	None
Week 3 – Windows Updates and Tools / Networking	3.2.5, 4.4.4
Week 4 – Disk Management	5.2.5, 5.3.7, 5.4.7, 5.4.8
Week 5 – Windows Server Installation – Hyper-V	6.2.9, 6.3.7, 6.4.7
Week 6 – Reading Break	None
Week 7 – Role Configuration – Active Directory, Users/Groups	7.4.4, 7.4.5, 7.5.7, 7.5.8, 7.8.4
Week 8 – Midterm exam	**None**
Week 9 – Role Configuration – Group Policy	8.1.7, 8.3.4, 8.6.3
Week 10 – Role Configuration – DNS	9.2.6, 9.2.7
Week 11 – Role Configuration – Shares / Permissions / Printers	10.1.7, 10.1.8, 10.5.4, 11.1.6
Week 12 – Role Configuration – WSUS / Monitoring	12.1.10, 12.3.5
Week 13 – Role Configuration – DHCP	13.3.5, 13.3.6
Week 14 – Load Balancing / Hyper-V Management	15.2.4, 15.3.8, 15.6.8, 15.6.9

Basis of Student Assessment (Weighting)
Evaluation for this course will be a combined total of theory and laboratory marks as given below:

Marking Criteria

Theory

D2L Assignments ---------- 10%
Quizzes In-class via D2L ---------- 10%
Term Test ---------- 20%
Final Exam ---------- 35%
Total Theory → 75 %

Laboratory

Online Labs ---------- 10%
In-class Labs Completion---------- 10%
Instructor Assessment ---------- 5%
Total Lab → 25 %

Total Mark → 100 %

D2L Assignments are weekly assignments that must be completed and submitted to the correct dropbox by Friday midnight each week. No late assignments will be accepted.

Chapter quizzes will be based on the online TestOut material completed in class via D2L.

There will be one **term test** spaced near the middle of the course (week 9 lab period) covering topics up to the end of Week 8.

A practical / written **3-hour final** covering all topics will be given at the end of the term during exam week.

The lab mark will consist of:

Online Labs – there are many virtual lab activities (TestOut) that will need to be completed throughout the course. Virtual online labs can be attempted multiple times to achieve 100% completion. Virtual lab activities will be checked for completion by Friday midnight of the corresponding week and a grade assigned based on the level of completion.

Completion of Labs – In-class labs must be completed by the end of the lab period and submitted to the correct dropbox by Friday midnight each week.

Instructor's Assessment - based on the student's demonstrated technical ability, effort put into lab exercises, attitude, attendance, work habits, and participation in class.

Professionalism: "the skill, good judgment, and polite behavior that is expected from a person who is trained to do a job well" (Merriam Webster online). Students will be evaluated on the above as well as their ability to work well with others.

It is the student responsibility to read the online TestOut Curriculum for that week in advance in order to develop a clear understanding of the content covered in class and lab.

NOTE: Any late assignments, labs, missed quizzes will result in a mark of zero. Only the term test may be made up due to illness as long as an acceptable doctor's note is provided.

Please note the following:

1. A grade of 50% or better is required in all assessment items above to be able to pass the course.
2. A grade of 60% or better is required in all assessment items above to qualify as a prerequisite.
3. No late materials will be accepted past midnight of the weekly due date – Fridays.
4. No opportunity will be available to write missed quizzes.
5. Attendance and completion of all lab material is mandatory to pass the course.

Grading System

[X] Standard Grading System (GPA)

[ ] Competency Based Grading System

Recommended Materials or Services to Assist Students to Succeed Throughout the Course

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Student Services or the College web site at http://www.camosun.bc.ca

STUDENT CONDUCT POLICY

There is a Student Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.
http://www.camosun.bc.ca/policies/policies.html

A. GRADING SYSTEMS *http://www.camosun.bc.ca/policies/policies.php*

The following grading system is used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0