CAMOSUN COLLEGE
Trades and Technology
Electronics and Computer Engineering

ELEX 139A
PC Server Fundamentals
W2020

COURSE OUTLINE

The calendar description is available on the web @   Online.camosun.ca

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.

1. 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	

2. Intended Learning Outcomes

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 Compute 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.

3. 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

4. Course Content and Schedule
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
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

WEEK7 – Reading Break

WEEK8   **Review / Mid Term Exam**
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

WEEK9
9.0 DNS
9.1 DNS Overview
9.2 Name Resolution
9.3 Zone Management
9.4 DNS Records
9.5 DNS Troubleshooting

WEEK10
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

WEEK11

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

WEEK12

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

WEEK13

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

WEEK14   **Review for Final**

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 17 - 21 Family Day/ Reading Break (Mon-Fri) – College Closed (Week 7)

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 – Role Configuration – Active Directory, Users/Groups	7.4.4, 7.4.5, 7.5.7, 7.5.8, 7.8.4
Week 7 – Reading Break	**None – Review for Midterm**
Week 8 – Midterm exam	**None – midterm exam during lab**
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, 9.4.5
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

5. 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 11:55 pm each week. As the solutions to assignments are provided the next day, absolutely **no late assignments will be accepted**.

Chapter quizzes will be based on the online TestOut material completed in class via D2L. There will be no opportunity to make up missed quizzes.

There will be one **term test** spaced near the middle of the course (week 8 lab period) covering topics up to the end of Week 7.

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

Lab attendance is mandatory. 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 also 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 11:55 PM 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.

6. Grading System

| X | Standard Grading System (GPA) |

| | Competency Based Grading System |

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

8. College Supports, Services and Policies

Immediate, Urgent, or Emergency Support
If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS *http://camosun.ca/about/policies/index.html*

The following two grading systems are 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

2. **Competency Based Grading System (Non GPA)**

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at http://camosun.ca/about/policies/index.html for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	*In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	*Compulsory Withdrawal*: A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.