

RYERSON UNIVERSITY

Ted Rogers School of Information Technology Management
And G. Raymond Chang School of Continuing Education

(C)ITM 315 – Server Administration

COURSE OUTLINE FOR 2020-2021

1.0 PREREQUISITE(S)

(C)ITM301

2.0 INSTRUCTOR INFORMATION

- Name:
- Office Phone Number:
- E-mail address:
- Faculty/course web site(s): <https://my.ryerson.ca>
- Office Location & Consultation hours:
 - Your instructor is available for personal consultation during scheduled consultation hours which are posted on their office door or on the course shell in D2L Brightspace. However, you are advised to make an appointment by e-mail or by telephone before coming to ensure that the professor is not unavoidably absent.
- E-mail Usage & Limits:

Students are expected to monitor and retrieve messages and information sent through D2L and Ryerson email on a frequent and consistent basis. In accordance with the policy on Ryerson student email accounts ([Policy 157](#)), Ryerson requires that any electronic communication by students to Ryerson faculty or staff be sent from their official Ryerson email account. Messages from other accounts may be disregarded.

3.0 CALENDAR COURSE DESCRIPTION

Servers and networks provide the foundation for information handling in businesses and organizations throughout the world. Effective network management plays a vital role in ensuring that this foundation is sound. In this course, students will learn concepts and practice hands-on skills related to network administration by exploring a popular server operating system.

4.0 COURSE OBJECTIVES AND LEARNING OUTCOMES

Learning outcomes describe what students are expected to have learned or achieved; as a result, they usually describe what students will be capable of doing, or what evidence will be provided to substantiate learning.

Students enrolled in this course will build upon knowledge and skills related to designing, managing and implementing data networks that were acquired in (C)ITM301. While (C)ITM301 looks at options available in designing a network, (C)ITM315 focuses on what happens after a network is installed. Somebody has to take responsibility for ensuring that the network runs smoothly and securely once it is deployed. This course prepares students to be that somebody - the network administrator. Students will develop detailed knowledge of: 1) key concepts and methodologies related to network administration 2) management features of a major network operating system. They will apply this knowledge to hands-on network management tasks. Specifically, students will use a range of techniques to configure and manage network resources such as file systems, users, groups, and group policies in a network running Windows Network Operation Systems in particular Windows Server 2012.

Upon completion of the course, students will be able to:

1. Describe the responsibilities and importance of the network administrator's role
2. Explain the role of a server Operating System
3. Explain Windows Server 2012 Active Directory concepts
4. Manage hardware devices, disks, network attached storage and services
5. Create and manage user, computer and group accounts
6. Manage access to the file system by configuring shared folder and file permissions
7. Create and manage group policy objects to control user desktop settings, security, scripts, software deployment and folder redirection
8. Distinguish between various methods, tools, and processes used to manage a server and monitor its performance
9. Describe TCP/IP components and the structure of Domain Name System
10. Describe server Virtualization with Hyper-V architecture

5.0 TEXTS & OTHER READING MATERIALS

Title: MCSA Guide to Installing and Configuring Microsoft Windows 2012/R2 (Exam 70-410)

Author: Greg Tomsho

Publisher: Course Technology

ISBN: 978-1285868653

Suggested/Recommended Textbook

Title: MCSA Guide to Administering Microsoft Windows Server 2012/R2 (Exam 70-411)

Author: Greg Tomsho

Publisher: CENGAGE Learning

ISBN: 978-1-285-86834-9

6.0 TEACHING METHODS

In Fall 2020 this course will be taught remotely in virtual classrooms. Instruction will take place at scheduled hours, following the approach outlined in D2L Brightspace. You will not be required to attend the Ryerson University campus to complete this course.

This course will incorporate the following teaching/learning methods: Lectures, discussions and hands-on application exercises. Inherent in the approach to learning in this course are the assumptions that you are self-motivated and self-directed, will contribute to group work and class discussions, and will demonstrate the time management skills required to complete lab exercises and other homework assignments by the deadline each week. In addition, the Lab Exercises are designed to apply the concepts learned in each module in a hand-on learning fashion. These include a range of techniques to configure and manage network resources such as file systems, users, groups, and group policy objects in a network running Windows Server 2012.

7.0 EVALUATION, ASSESSMENT AND FEEDBACK

The grade for this course is composed of the mark received for each of the following components:

Evaluation Component	Percentage of the Final Grade
Lab Exercises	30%
Midterm Exam	25%
Final Exam	45%
Total	100%

NOTE: Students must achieve a course grade of at least 50% to pass this course.

- ❖ At least **20%** of student's grade based on individual work will be returned to students prior to the last date to drop a course in [good academic standing](#).

Citation Format for Essays and Term Papers

All essay assignments, term paper and other written works must adhere with APA citation format. Technical errors (spelling, punctuation, proofing, grammar, format, and citations) and/or inappropriate levels of language or composition will result in marks being deducted. You are encouraged to obtain assistance from the Writing Centre (www.ryerson.ca/writingcentre) for help with your written communications as needed.

You can find APA guidelines and academic referencing from the following online resources:

[Student Learning Support > Online Resources > Writing Support Resources](#)

- [APA Basic Style Guide](#)

[Ryerson Library Citations and Style Guides](#)

- [APA Style](#)

8.0 PLAGIARISM DETECTION

Turnitin (if used in this course)

Turnitin.com is a plagiarism prevention and detection service to which Ryerson subscribes. It is a tool to assist instructors in determining the similarity between students' work and the work of other students who have submitted papers to the site (at any university), internet sources, and a wide range of books, journals and other publications. While it does not contain all possible sources, it gives instructors some assurance that students' work is their own. No decisions are made by the service; it generates an "originality report," which instructors must evaluate to judge if something is plagiarized.

Students agree by taking this course that their written work will be subject to submission for textual similarity review to Turnitin.com. Instructors can opt to have student's papers included in the Turnitin.com database or not. Use of the Turnitin.com service is subject to the terms-of-use agreement posted on the Turnitin.com website. Students who do not want their work submitted to this plagiarism detection service must, by the end of the second week of class, consult with their instructor to make alternate arrangements.

Even when an instructor has not indicated that a plagiarism detection service will be used, or when a student has opted out of the plagiarism detection service, if the instructor has reason to suspect that an individual piece of work has been plagiarized, the instructor is permitted to submit that work in a non-identifying way to any plagiarism detection service.

Virtual Proctoring (if used in this course)

Online exam(s) within this course use a virtual proctoring system. Please note that your completion of the exam will be recorded via the virtual platform and subsequently reviewed by your instructor. The virtual proctoring system provides the instructor with a recording that only includes video where possible indications of suspicious behaviour are identified. Recordings will be held for a limited period of time in order to ensure academic integrity is maintained.

Access to a computer that can support remote recording is your responsibility as a student. The computer should have the latest operating system, at a minimum Windows (10, 8, 7) or Mac (OS X 10.10 or higher) and web browser Google Chrome or Mozilla Firefox. You will need to ensure that you can complete the exam using a reliable computer with a webcam and microphone available, as well as a high-speed internet connection. Please note that you will be required to show your Ryerson OneCard prior to beginning to write the exam. In cases where you do not have a Ryerson OneCard, government issued ID is permitted.

Information will be provided prior to the exam date by your instructor who may provide an opportunity to test your set-up or provide additional information about online proctoring. Since videos of you and your environment will be recorded while writing the exam, please consider

preparing the background (room / walls) so that personal details are not visible, or move to a room that you are comfortable showing on camera.

9.0 TOPICS – SEQUENCE & SCHEDULE

Session	Topic	Learning Outcomes	Reading(s)	Activities & Due Dates
1	Introduction to Windows Server 2012	<ul style="list-style-type: none"> ● Explain the functions & the role of a server OS in a network ● Describe the editions of Windows Server 2012/R2 ● Define private cloud terms and technologies ● Explain the core technologies of Windows Server 2012/R2 	Read Ch. 1 Answer Review Questions	
2	Windows Server 2012 hardware configuration and remote access	<ul style="list-style-type: none"> ● Plan a Windows Server 2012/R2 installation ● Explain Windows Server Core services & features ● Explain Remote access services ● Describe NIC teaming ● Explain Windows Firewall 	Read Ch. 2 & 3 Answer Review Questions	Lab 1 Exercise: Navigating Windows 2012 Active Directory & Terminal Services Remote access
3	Configuring local and network attached Storage	<ul style="list-style-type: none"> ● Describe server storage (local & network) ● Explain virtual disks (VDs) ● Explain RAID systems ● Describe Windows file systems 	Read Ch. 1 Answer Review Questions	Lab 2 Exercise: File system

		<ul style="list-style-type: none"> ● Explain the role of storage spaces and primordial pool with VDs 		
4	<p>Managing file System Secure access to file with permissions</p> <p>Distributed File System</p>	<ul style="list-style-type: none"> ● Describe NTFS file system & its features ● Describe how Windows implements file sharing ● Describe Server Message Block (SMB) and CIFS ● Describe how to secure access to files with permissions ● Explain how to manage shared folders ● Describe Distributed Files system 	<p>Read Ch. 5 Lecture Notes</p> <p>Answer Review Questions</p>	<p>Lab 3 Exercise: Active Directory components</p>
5	<p>Introduction to Active Directory Infrastructure</p>	<ul style="list-style-type: none"> ● Describe the role of AD & LDAP ● Explain AD infrastructure ● Explain the role of global catalog ● Describe objects AD objects ● Describe different types of domain trust relationships 	<p>Read Ch. 6 Lecture Notes</p> <p>Answer Review Questions</p>	<p>Lab 4 Exercise: Creating Domain Objects</p>
6	<p>Administering Active Directory (user and group accounts and computers)</p>	<ul style="list-style-type: none"> ● Explain the role of OUs ● Explain the role of security groups 	<p>Read Ch. 7 Lecture Notes</p> <p>Answer Review Questions</p> <p>Prepare for Midterm Exam</p>	<p>Lab 5 Exercise: Creating Domain Objects using command line, Publishing folders in AD</p>

		<ul style="list-style-type: none"> • Describe computer accounts • Explain AGDLP strategy for managing domain objects 		
7	Midterm Examination Administering Active Directory (Bulk import and export domain objects)	<ul style="list-style-type: none"> • Explain different types of user profiles. • Explain utilities and tools for bulk import/export. • Manage multiple user accounts using scripting language • Explain advanced administrative commands for managing domain objects 	Read Ch. 7 Lecture Notes Answer Review Questions	
8	Introduction to Group Policy	<ul style="list-style-type: none"> • Describe how to configure group policies • Describe the architecture and processing of group policies • Explain the order of group policy and its settings • Explain how to manage and monitor group policies • Explain security templates 	Read Ch. 8 Lecture Notes Answer Review Questions	Lab 6 Exercise: Advanced Administrative commands

9	Active Directory Group Policy Management	<ul style="list-style-type: none"> ● Explain the role of folder redirection ● Explain security related GPOs ● Describe the role of file system policy ● Describe Audit policies ● Describe the role of administrative templates in managing GPOs 	<p>Read Ch. 8 (Auditing) Lecture Notes</p> <p>Answer Review Questions</p>	<p>Lab 7 Exercise: Advanced Administrative commands, Part 2 Bulk import/Export users</p>
10	Windows Networking (TCP/IP)	<ul style="list-style-type: none"> ● Describe the TCP/IP protocol and its components ● Define IPv4 addressing and calculate subnet masks ● Configure IPv4 & IPV6 addresses ● Explain transition from IPv4 to IPv6 ● Describe Windows tunneling tools and utilities including Teredo 	<p>Read Ch. 9 Lecture Notes</p> <p>Answer Review Questions</p>	<p>Lab 8 Exercise: Group Policy</p>
11	Server Virtualization with Hyper-V	<ul style="list-style-type: none"> ● Describe the Hyper-V server role ● Explain virtual machines ● Manage virtual networks ● Describe virtual hardware components 	<p>Read Ch. 12 Lecture Notes</p> <p>Answer Review Questions</p>	<p>Lab 9 Exercise: Advanced TCP/IP</p>

		<ul style="list-style-type: none"> ● Describe Hyper-V virtual networks ● Manage Checkpoints 		
12	Windows DNS Server Monitoring & Auditing	<ul style="list-style-type: none"> ● Describe the structure of Domain Name System ● Describe DNS records ● Monitor and troubleshoot DNS 	Read Ch. 10 Lecture Notes Answer Review Questions	Course Wrap up

10.0 VARIATIONS WITHIN A COURSE

All sections of a course (Day and CE sections) will follow the same course outline and will use the same course delivery methods, methods of evaluation, and grading schemes. Any deviations will be posted on D2L Brightspace once approved by the course coordinator.

11.0 OTHER COURSE, DEPARTMENTAL, AND UNIVERSITY POLICIES

For more information regarding course management and departmental policies, please consult the [Course Outline Appendix](#) which is posted on the [Ted Rogers School of Information Technology Management website](#).

NOTE: Students must adhere to all relevant university policies found in their online course shell in D2L and /or on the following URL: [senate-course-outline-policies](#).

The appendix covers the following topics:

- Attendance & Class Participation
- Email Account
- Request for Academic Consideration
- Examinations & Tests
- Late Assignments
- Standard of Written Work
- Academic Grading Policy
- Academic Integrity
- Student Rights

Important Resources Available at Ryerson

- [Academic Accommodation Support](#): Ryerson University acknowledges that students have diverse learning styles and a variety of academic needs. If you have a diagnosed disability that impacts your academic experience, connect with Academic Accommodation Support (AAS). Visit the [AAS website](#) or contact aaadmin@ryerson.ca for more information. Note: All communication with AAS is voluntary and confidential, and will not appear on your transcript.
- [The Library](#) provides research workshops and individual assistance. If the University is open, there is a Research Help desk on the second floor of the library, or go to [Workshops](#).
- [Student Learning Support](#) offers group-based and individual help with writing, math, study skills, and transition support, as well as [resources and checklists to support students as online learners](#).
- You can submit an [Academic Consideration Request](#) when an extenuating circumstance has occurred that has significantly impacted your ability to fulfill an academic requirement.
- [Ryerson COVID-19 Information and Updates for Students](#) summarizes the variety of resources available to students during the pandemic.
- Familiarize yourself with the tools you will need to use for remote learning. The [Continuity of Learning Guide](#) for students includes guides to completing quizzes or exams in D2L or Respondus, using D2L Brightspace, joining online meetings or lectures, and collaborating with the Google Suite.