

# **RYERSON UNIVERSITY**

## **Ted Rogers School of Information Technology Management and G. Raymond Chang School of Continuing Education**

### **COURSE OF STUDY 2017-2018**

#### **(C)ITM 315 – Server Administration**

##### **1.0 PREREQUISITE**

The prerequisite for this course is ITM 301 or Direct Entry. Students who do not have the prerequisites will be dropped from the course.

##### **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 issued to them by the University via Ryerson online systems on a frequent and consistent basis. ***Ryerson requires that any official or formal electronic communications from students be sent from their official Ryerson E-mail account.*** As such emails from other addresses may not be responded to.

##### **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 OVERVIEW

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.

## 5.0 COURSE OBJECTIVES

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

## 6.0 EVALUATION

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%
<b>Total</b>	<b>100%</b>

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

### 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](http://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:

a) Ryerson Writing Support Web site:

<http://www.ryerson.ca/content/dam/studentlearningsupport/resources/citation-conventions/APA%20Basic%20Style%20Guide.pdf>

b) Ryerson Library for APA style guide: <https://library.ryerson.ca/guides/style/>

## 7.0 POSTING OF GRADES

- ❖ All grades, on assignments or tests must be posted or made available to students through the return of their work. Grades on final exams must be posted. However, as there may be other consideration in the determination of final grades, students will receive their official final grade in the course only from the Registrar. Final official course grades may not be posted or disclosed anywhere by an instructor.
- ❖ Posting of grades on the Course Management System (D2L Brightspace) is preferred. If grades are posted in hard copy they must be posted numerically sorted by student identification number after at least the **first four digits** have been removed. Instructors must inform students in all course management documentation of the method to be used in the posting of grades. Students who wish not to have their grades posted must inform the instructor in writing.
- ❖ Some graded work will be returned to students prior to the last date to drop a course without academic penalty.

## 8.0 TOPICS – SEQUENCE & SCHEDULE

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

<b>4</b>	Managing file System Secure access to file with permissions  Distributed File System	<ul style="list-style-type: none"> <li>• Describe NTFS file system &amp; its features</li> <li>• Describe how Windows implements file sharing</li> <li>• Describe Server Message Block (SMB) and CIFS</li> <li>• Describe how to secure access to files with permissions</li> <li>• Explain how to manage shared folders</li> <li>• Describe Distributed Files system</li> </ul>	Read Ch. 5 Lecture Notes  Answer Review Questions	<b>Lab 3 Exercise:</b> Active Directory components
<b>5</b>	Introduction to Active Directory Infrastructure	<ul style="list-style-type: none"> <li>• Describe the role of AD &amp; LDAP</li> <li>• Explain AD infrastructure</li> <li>• Explain the role of global catalog</li> <li>• Describe objects AD objects</li> <li>• Describe different types of domain trust relationships</li> </ul>	Read Ch. 6 Lecture Notes  Answer Review Questions	<b>Lab 4 Exercise:</b> Creating Domain Objects
<b>6</b>	Administering Active Directory (user and group accounts and computers)	<ul style="list-style-type: none"> <li>• Explain the role of OUs</li> <li>• Explain the role of security groups</li> <li>• Describe computer accounts</li> <li>• Explain AGDLP strategy for managing domain objects</li> </ul>	Read Ch. 7 Lecture Notes Answer Review Questions Prepare for Midterm Exam	<b>Lab 5 Exercise:</b> Creating Domain Objects using command line, Publishing folders in AD
<b>7</b>	<b>Midterm Examination</b>  Administering Active Directory (Bulk import and export domain objects)	<ul style="list-style-type: none"> <li>• Explain different types of user profiles.</li> <li>• Explain utilities and tools for bulk import/export.</li> <li>• Manage multiple user accounts using scripting language scripting language</li> <li>• Explain advanced administrative commands for managing domain objects</li> </ul>	Read Ch. 7 Lecture Notes  Answer Review Questions	
<b>8</b>	Introduction to Group Policy	<ul style="list-style-type: none"> <li>• Describe how to configure group policies</li> <li>• Describe the architecture and processing of group policies</li> <li>• Explain the order of group policy and its settings</li> <li>• Explain how to manage and monitor group policies</li> <li>• Explain security templates</li> </ul>	Read Ch. 8 Lecture Notes  Answer Review Questions	<b>Lab 6 Exercise:</b> Advanced Administrative commands
<b>9</b>	Active Directory Group Policy Management	<ul style="list-style-type: none"> <li>• Explain the role of folder redirection</li> <li>• Explain security related GPOs</li> <li>• Describe the role of file system policy</li> <li>• Describe Audit policies</li> <li>• Describe the role of administrative templates in managing GPOs</li> </ul>	Read Ch. 8 (Auditing) Lecture Notes  Answer Review Questions	<b>Lab 7 Exercise:</b> Advanced Administrative commands, Part 2 Bulk import/ Export users
<b>10</b>	Windows Networking (TCP/IP)	<ul style="list-style-type: none"> <li>• Describe the TCP/IP protocol and its components</li> <li>• Define IPv4 addressing and calculate subnet masks</li> <li>• Configure IPv4 &amp; IPV6 addresses</li> <li>• Explain transition from IPv4 to IPv6</li> </ul>	Read Ch. 9 Lecture Notes  Answer Review Questions	<b>Lab 8 Exercise:</b> Group Policy

		<ul style="list-style-type: none"> <li>• Describe Windows tunneling tools and utilities including Teredo</li> </ul>		
<b>11</b>	Server Virtualization with Hyper-V	<ul style="list-style-type: none"> <li>• Describe the Hyper-V server role</li> <li>• Explain virtual machines</li> <li>• Manage virtual networks</li> <li>• Describe virtual hardware components</li> <li>• Describe Hyper-V virtual networks</li> <li>• Manage Checkpoints</li> </ul>	Read Ch. 12 Lecture Notes  Answer Review Questions	<b>Lab 9 Exercise:</b> Advanced TCP/IP
<b>12</b>	Windows DNS Server Monitoring & Auditing	<ul style="list-style-type: none"> <li>• Describe the structure of Domain Name System</li> <li>• Describe DNS records</li> <li>• Monitor and troubleshoot DNS</li> </ul>	Read Ch. 10 Lecture Notes  Answer Review Questions	<b>Course Wrap up</b>

## 9.0 TEACHING METHODS

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.

## 10.0 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

## 11.0 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.

## 12.0 OTHER COURSE, DEPARTMENTAL, AND UNIVERSITY POLICIES

- For more information regarding course management and departmental policies, please consult the ‘**Appendix of the Course of Study**’ which is posted on the Ted Rogers School of Information Technology Management website, <http://www.ryerson.ca/content/dam/itm/documents/cos/Appendix.pdf>. This appendix covers the following topics:

- 12..1** Attendance & Class Participation
- 12..2** Email Usage
- 12..3** Request for Academic Consideration
  - 12..3.1** Ryerson Health Certificate
  - 12..3.2** Academic Accommodation for Students with Disabilities
  - 12..3.3** Religious, Aboriginal or Spiritual Observance
  - 12..3.4** Re-grading and Recalculation
- 12..4** Examinations & Tests
  - 12..4.1** Period of Prohibition from Testing
  - 12..4.2** Make-Up of Mid-Term Tests, Assignments and Other Assessments  
During the Semester
  - 12..4.3** Make –Up of Final Exams
  - 12..4.4** Missing a Make-Up
- 12..5** Late Assignments
- 12..6** Standard of Written Work
- 12..7** Academic Grading Policy
- 12..8** Academic Integrity
  - 12..8.1** Turnitin.com
- 12..9** Student Rights