Toronto Metropolitan University

The Chang School of Continuing Education

TED ROGERS SCHOOL Information Technology Management

(C)ITM 315 – Network Administration

COURSE OUTLINE FOR 2025-2026

Prerequisite(s): ITM 301

Faculty/Contract Lecturer Information

- **Faculty/Contract Lecturer Name:**
- **Office Location:**
- **Office Hours:**
- **Phone:** (416) 979 – 5000, ext.
- **Course Website:** my.torontomu.ca (for courses using D2L)
- **Email Address:** youremail@torontomu.ca

Email Policy

Students are expected to monitor and retrieve messages and information sent through D2L and TMU email on a frequent and consistent basis. In accordance with the Policy on TMU Student E-mail Accounts (Policy 157), Toronto Metropolitan University (TMU) requires that any electronic communication by students to TMU faculty or staff be sent from their official university email account. Communications sent from other accounts may be disregarded.

Course Description

Servers and networks provide the foundation for information handling in businesses and organizations throughout the world. Effective server and 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.

Course Details

Teaching Methods

If you are registered in an in-person or a virtual classroom, instruction will take place at scheduled hours, following the approach outlined in D2L Brightspace. If you are registered in a Chang School Distance Education course, please follow the schedule, course outline and learning modules as outlined in D2L Brightspace.

Note: All assessments in this course, regardless of its delivery format, will be held in-person on campus. This applies to in-person, virtual, and online courses, including sections/courses delivered through the Chang School.

Course Materials

Textbook and Other Learning Materials:

Lecture:
Title: Linux+ and LPIC-1 Guide to Linux Certification, 6th Edition
Author(s): Jason Eckert
Publisher: Cengage Learning
Paperback ISBN-13: 9798214000800
12-month Cengage eText: 9798214000947
Price: eText: $77.95**; Paperback:** $245.95

Course Learning Outcomes

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 the options available for designing a network, (C)ITM315 focuses on the work required after a network is installed, to ensure that the network runs smoothly and securely once it is deployed. This course prepares students to serve in such a capacity- as a server administrator. Students will develop detailed knowledge of: 1) key concepts and methodologies related to servers administration, and 2) management features of a major network operating system. They will apply this knowledge to hands-on server management tasks. Specifically, students will use a range of techniques to configure and manage server resources such as file systems, users, and groups in a network running a Linux Network Operation Systems in particular Red Hat/Fedora.
Upon completion of the course, students will be able to:
1. Describe the responsibilities and importance of the server administrator’s role
2. Explain Linux network models and server roles
3. Explain Linux distribution/Packages concepts
4. Manage hardware devices, disks and data storage on the server
5. Explain Linux File System Structure
6. Manage file systems’ permissions
7. Explain Linux TCP/IP network components and services such as web server.
8. Distinguish between various methods, tools, and processes used to manage a server and monitor its performance
9. Manage Linux enterprise security
10. Use a variety of techniques to secure a server environment

Academic Integrity

Academic integrity is integral to your learning, the credibility of your degree or certification, and the integrity of the university as a whole. Senate Policy 60: Academic Integrity defines academic misconduct, provides a non-exhaustive list of examples of behaviours that may be considered as academic misconduct, and explains how academic misconduct concerns are evaluated and decided. The entirety of the policy applies in this course. As well, please note that submitting work created in whole or in part by artificial intelligence tools unless expressly permitted by the faculty/contract lecturer, is considered a violation of Policy 60.

Generative AI Course Policy, Plagiarism Detection, and Virtual Proctoring

Generative AI Course Policy

Use of Generative AI (e.g. ChatGPT, Grammarly, Perplexity, DeepL Translator) to develop or assist with any ideas or material submitted for coursework is expressly prohibited in this course. Use of Generative AI in this manner will be considered a breach of Policy 60.

Turnitin or another originality detection software

Turnitin is a plagiarism prevention and detection service to which TMU subscribes. It is a tool to assist faculty/contract lecturers 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 faculty/contract lecturers some assurance that students' work is their own. No decisions are made by the service; it generates an "originality report," which faculty/contract lecturers 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. Instructors can opt to have student's papers included in the Turnitin database or not. Use of the Turnitin service is subject to the terms-of-use agreement posted on the Turnitin 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 faculty/contract lecturer to make alternate arrangements. Students who choose not to have their papers screened for textual similarity review by turnitin may be required to submit additional work with their research essay. For example:

- an annotated bibliography of each source used in your paper; and/or
- the first few pages of each cited source used in your paper

Even when an faculty/contract lecturer 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 faculty/contract lecturer has reason to suspect that an individual piece of work has been plagiarized, the faculty/contract lecturer is permitted to submit that work in a non-identifying way to any plagiarism detection service.

Copyright

The course materials provided to you are copyrighted, and may not be shared without my express written permission. Do not share these materials (e.g. course outline, lecture slides, assignment instructions) with others and do not post them on the internet during the course, or at any time after. If you do so, Policy 60 will apply.

Academic Integrity Resources

To learn more about Policy 60 and how to avoid academic misconduct, please review and take advantage of these resources:

- Policy 60: Academic Integrity: www.torontomu.ca/senate/policies/academic-integrity-policy-60/
- Academic Integrity Office website: www.torontomu.ca/academicintegrity
- "Academic Integrity in Space" game: https://games.de.torontomu.ca/aio/#/
- "Academic Integrity in Cyberspace!" game: https://www.torontomu.ca/aic/#/
- Student Life and Learning Support: www.torontomu.ca/student-life-and-learning/learning-support

Topics and Course Schedule

Week	Topic	Readings
1	**Introduction** • Explain features of a Linux OS • Describe the characteristics origins of the Linux OS • Explain the common uses of Linux in industry • Explain the structure of the Linux shell and interface	Jason Eckert: Chapters 1 & 2
2	**Linux File System** • Describe the various types of Linux files • Display the contents of text files and binary files • Search text files using grep • Use the vi editor to manipulate text files	Jason Eckert: Chapter 3
3	**Linux File System Management** • Understand and create linked files • Explain the function Linux file system • Explain standard Linux file commands • Assign file and directory permissions • Apply special file and directory permissions • Modify the default access control list (ACL)	Jason Eckert: Chapter 4
4	**Linux File System Administration** • Understand Linux device files • Understand common file system types and their features • Explain mount and unmount of a file system • Manage file system storage • Understand the role of ISO images • Explain the role of LVM for logical volumes	Jason Eckert: Chapter 5
5	**Linux Server Deployment** • Describe popular server hardware components • Describe SCSI devices and SANs • Explain Linux storage fault tolerance • Explain the ZFS and BTRFS file system • Explore Linux server distribution • Understand key troubleshooting techniques	Jason Eckert: Chapter 6
6	**Working with the BASH Shell** • Explain the role of I/O command • Understand the role Linux shell environment variables • Describe the purpose and nature of shell scripts • Use Git to perform version control for shell scripts	Jason Eckert: Chapter 7
7	**Midterm Examination** **Linux System Initialization** • Explain the UNIX SysV and startup processes • Understand the role of start, stop, and restart daemons • Explain Linux X Windows	Jason Eckert: Chapters 8 & 9

	• Configure X Windows settings • Create and manipulate background processes • Use Linux background processes • Understand the role of at and cron daemons	
8	**Linux Administrative Tasks** • Explore the Linux network printing • Explain the purpose of log files • Mange users and group accounts	Jason Eckert: Chapter 10
9	**System Backup and Software Installation** • Perform system backups using the tar, cpio, dump, and dd commands • Describe common types of Linux software • Describe software packages from source code • Describe Red Hat RPM and Debian DPM	Jason Eckert: Chapters 11
10	**Network Configuration and Remote Administration** • Explore TCP/IP networking with Linux • Explain the basic configuration of IP • Explain a network interface to use IP • Explain Linux PPP interface • Configure IP routing • Identify common network services • Explore command-line for remote administration	Jason Eckert: Chapter 12
11	**Network Services and Cloud Technologies** • Configure DHCP, DNS, and NTP services • Configure Web services using the Apache Web server • Configure file-sharing services with Samba, NFS, and FTP • Configure email services using Postfix • Configure database services using PostgreSQL • Describe how virtualization within cloud environments • Explore a business case study	Jason Eckert: Chapter 13
12	**Security policies and Governance** • Describe components of Linux security • Describe the role of enterprise governance in deploying security policies • Explore Linux network security • Describe good troubleshooting practices • Describe hardware, application, file system, and network security • Monitor system performance • Identify and fix common performance problems	Jason Eckert: Chapter 14

Evaluation

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

Evaluation Component	Due Date	Percentage of Final Grade	Anticipated Return Date
Assignments	Weeks 3, 5, 8 & 9	20%	Week 5, 7, 10, 11
Group Project	Week 12	10%	Week 13
Midterm Exam	Week 7	25%	Week 9
Final Exam	TBA	45%	TBD
Final Grade		100%	

Note: Students must achieve a course grade of at least 50% to pass this course.
At least 20% of the grade based on individual work will be returned to students prior to the last date to drop a course in good academic standing. For Fall 2025, this is Friday November 14, 2025. For Winter 2026, this is Friday March 27, 2026.

University Policies

You are reminded that you are required to adhere to all relevant university policies found in their online course shell in D2L and/or on the Senate website. Please refer to the Course Outline Appendix for more detail.

Important Resources Available at Toronto Metropolitan University

- The University Libraries provide research workshops and individual consultation appointments. There is a drop-in Research Help desk on the second floor of the library, and students can use the Library's virtual research help service to speak with a librarian, or book an appointment to meet in person or online.
- Student Life and 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. You may always visit the Senate website and select the blue radio button on the top right hand side entitled: Academic Consideration Request (ACR) to submit this request.
  For Extenuating Circumstances, Policy 167: Academic Consideration allows for a once per semester ACR request without supporting documentation if the absence is less than 3 days in duration and is not for a final exam/final assessment. Absences more than 3 days in duration and those that involve a final exam/final assessment, always require documentation. Students must notify their faculty/contract lecturer once a request for academic consideration is submitted. See Senate Policy 167: Academic Consideration.
  Longer absences are not addressed through Policy 167 and should be discussed with your Chair/Director/Program to be advised on next steps.
- If taking a remote course, familiarize yourself with the tools you will need to use for remote learning. The Remote Learning Guide for students includes guides to completing quizzes or exams in D2L Brightspace, with or without Respondus LockDown Browser and Monitor, using D2L Brightspace, joining online meetings or lectures, and collaborating with the Google Suite.
- FAQs Academic Considerations and Appeals
- Information on Copyright for Faculty and students.
- Information on Academic Integrity for Faculty and students.

Accessibility

- At Toronto Metropolitan University, we are committed to ensuring that all courses are accessible to everyone and to removing barriers that may prevent some individuals from enrolling in courses.
- All technologies and tools used in this course are accessible.
- Students who discover an accessibility barrier with any of the course materials or technologies should contact their faculty/contract lecturer.
- As outlined in Policy 159: Academic Accommodation of Students with Disabilities, students are required to proactively consult with AAS, the faculty/contract lecturer, Department or Faculty, as soon as feasible, including prior to enrolling in a course or program, on any concerns they may have about their ability to meet the essential academic requirements of a course/program.

Academic Accommodation Support

Academic Accommodation Support (AAS) is the university's disability services office. AAS works directly with incoming and returning students looking for help with their academic accommodations. AAS works with any student who requires academic accommodation regardless of program or course load.

- Learn more about Academic Accommodation Support.
- Learn how to register with AAS.
- Learn about Policy 159: Academic Accommodation of Students with Disabilities

Academic Accommodations (for students with disabilities) and Academic Consideration (for students faced with extenuating circumstances that can include short-term health issues) are governed by two different university policies. Learn more about Academic Accommodations versus Academic Consideration and how to access each.

Wellbeing Support

At Toronto Metropolitan University, we recognize that things can come up throughout the term that may interfere with a student's ability to succeed in their coursework. These circumstances are outside of one's control and can have a serious impact on physical and mental well-being. Seeking help can be a challenge, especially in those times of crisis.

If you are experiencing a mental health crisis, please call 911 and go to the nearest hospital emergency room. You can also access these outside resources at anytime:

- Distress Line: 24/7 line for if you are in crisis, feeling suicidal or in need of emotional support (phone: 416–408–4357)
- Good2Talk: 24/7-hour line for postsecondary students (phone: 1-866-925-5454)
- Keep.meSAFE: 24/7 access to confidential support through counsellors via My SSP app or 1-844-451-9700

If non-crisis support is needed, you can access these campus resources:

- Centre for Student Development and Counselling: 416-979-5195 or email csdc@torontomu.ca
- Consent Comes First – Office of Sexual Violence Support and Education: 416-919-5000 ext 3596 or email osvse@torontomu.ca
- Medical Centre: call (416) 979-5070 to book an appointment

We encourage all Toronto Metropolitan University community members to access available resources to ensure support is reachable. You can find more resources available through the Toronto Metropolitan University's Wellbeing Central website.