Computer Science COMP4453

Computer Networks and Distributed Systems -Winter 2024

Instructor: Dr. Hosam El-Ocla, P.Eng. Office: ATAC 5019

Office hours: Monday, Wednesday 3:004:00 (appointment should be through email) E-mail: hosam@lakeheadu.ca

Telephone: (807) 343-8270

# Course Abstract:

This is an introductory course that handles basic concepts of Computer Networks including LAN, WAN, internetworking, switching, communication protocols, e.g. OSI model and TCP/IP suite. By the end of this course, students will be able to understand a wide range of computer networks basic concepts.

# Course Outlines:

1. Introduction to computer networks concepts
2. Network models
3. Switching techniques
4. Data link control: Flow and error controls
5. TCP/IP protocol suite: IP, UDP and TCP protocols
6. Network layer: address mapping
7. Routing techniques

|  |  |
| --- | --- |
| **Lectures** | **Content** |
| Weeks 1, 2 | Introduction to computer networks concepts |
| Weeks 2, 3 | Network models: TCP/IP suite and OSI model |
| Weeks 4-6 | Switching techniques: circuit, packet switching, switch structures |
| Week 7 | Study break |
| Weeks 6-9 | Data link control: framing, flow and error controls |
| Weeks 9-11 | TCP/IP protocol suite: IP, UDP and TCP protocols |
| Weeks 11, 12 | Network layer: address mapping |
| Weeks 12, 13 | Routing techniques |

# Material Used:

1. Textbook: [MINI CHITRA,](https://www.amazon.ca/s/ref%3Ddp_byline_sr_book_1?ie=UTF8&field-author=MINI%2BCHITRA&text=MINI%2BCHITRA&sort=relevancerank&search-alias=books-ca) “COMPUTER NETWORKS: Unit-I INTRODUCTION”–

Independently published (June 11 2023),

https:/[/www.amazon.c](http://www.amazon.ca/COMPUTER-NETWORKS-Unit-I-INTRODUCTION/dp/B0C7J4Y811)a[/COMPUTER-NETWORKS-Unit-I-INTRODUCTION/dp/B0C7J4Y811,](http://www.amazon.ca/COMPUTER-NETWORKS-Unit-I-INTRODUCTION/dp/B0C7J4Y811)

1. Lecture slides will be available on D2L.

# Notes on the course:

1. Unclear items will be discussed in the class.
2. Late assignments will be penalized 10% for each calendar day that is late. Late assignments will be accepted without penalty ONLY when some compelling reason is provided (e.g. sickness certificate) justifying the lateness.
3. Cheating or any other form of academic dishonesty will not be tolerated. Students who are suspected of such dishonesty will have all evidence of their activity referred to University Judicial Officer from whom the following action may be sought if guilt is determined; no credit for the given assignment or exam and no opportunity to redo the work in question.

**Mid term Exam Schedule:** Monday, March 4th.

|  |  |
| --- | --- |
| **Grading Policy:** |  |
| Quizzes & Discussions | 35% |
| Midterm Exam | 15% |
| Final Exam | 50% |

**Accommodations:** Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities and/or medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please contact [Student Accessibility](http://studentaccessibility.lakeheadu.ca/) [Services](http://studentaccessibility.lakeheadu.ca/) (SC0003, 343-8047 or sas@lakeheadu.ca)

# Academic Integrity Statement:

I understand and agree that:

1. Unless otherwise allowed by the course instructor, I must complete the assignments in this course without the assistance of anyone else.
2. Unless otherwise allowed by the course instructor, I must not access any sources or materials (in print, online, or in any other way) to complete any course exam.

I further understand and agree that, if I violate either of these two rules, or if I provide any false or misleading information about my completion of course assignments or exams, I may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviours that support the University’s academic values.

# Copyright Compliance:

I understand and agree that all instructional, reference, and administrative materials to which I am given access in this course (the "course materials"), whether they consist of text, still or kinetic images, or sound, whether they are in digital or hard copy formats, and in whatever media they are offered, are protected in their entirety by copyright, and that to comply with this copyright and the law

1. I may access and download the course materials only for my own personal and non-commercial use for this course; and
2. I am not permitted to download, copy, or store (in any medium) any text, image, or sound component

of the course materials for any other purpose whatsoever, or to forward or share, transmit, broadcast, show, post or play in public, adapt, or change in any way any text, image, or sound component of the course materials, except as expressly authorized, and only to the extent authorized, in writing, by the course instructor."

I further understand and agree that, if I infringe the copyright of the course materials in any way, I may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviours that support the University’s academic values.

# Regulations

It is the responsibility of each student registered at Lakehead University to be familiar with, and comply with all the terms, requirements, regulations, policies and conditions in the Lakehead University [Academic Calendar.](http://navigator.lakeheadu.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=25&chapterid=6999&loaduseredits=False) This includes, but is not limited to, Academic Program Requirements, Academic Schedule of Dates, University and Faculty/School Policies and Regulations and the Fees and Refund Policies and Schedules (Lakehead University Regulations webpage, 2020- 21).

# Academic Integrity

A breach of Academic Integrity is a serious offence. The principle of Academic Integrity, particularly of doing one’s own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students should view the [Student Code of Conduct - Academic](https://www.lakeheadu.ca/students/student-life/student-conduct/academic-integrity/node/51239) [Integrity](https://www.lakeheadu.ca/students/student-life/student-conduct/academic-integrity/node/51239) for a full description of academic offences, procedures when Academic Integrity breaches are suspected and sanctions for breaches of Academic Integrity.

**Supports for Students** – there are many resources available to support students. These include but are not limited to:

* [Health and Wellness](https://www.lakeheadu.ca/current-students/student-health-and-counselling-centre)
* [Student Success Centre](https://www.lakeheadu.ca/current-students/student-success-centre)
* [Student Accessibility Centre](https://www.lakeheadu.ca/current-students/student-services/accessibility/)
* [Library](https://library.lakeheadu.ca/)
* [Lakehead International](https://www.lakeheadu.ca/international)
* [Indigenous Initiatives](https://www.lakeheadu.ca/indigenous)