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| **Course Outline**  Computing Science  School of Advanced Technologies and Mathematics |

**COMP 3270 – 3**

**Computer Networks (3,1,0)**

**Winter 2016**

**Instructor: Dr. Mahnhoon Lee** Phone/Voice Mail: (250) 377-6022

Office: HL 424 E-Mail: mlee@tru.ca

Office Hours: 10:30 – 11:20 @ Mon, Wed, Fri, and 11:30 – 1:20 @ Tue, and

by appointments

**Calendar Description**

Students learn about computer network design principles and concepts, network architecture, Open Systems Interconnection (OSI) model, error detection and recovery, local area networks, bridges, routers and gateways, network naming and addressing, routing protocols, inter-networking, wireless networks, and Internet Protocol v6 network addressing. Students first gain knowledge about basic local area networks, and then learn about the wireless Local Area Networks, techniques to extend Local Area Networks, inter-networking and emerging network technologies.

**Educational Objectives/Outcomes**

1. Understand network management concepts and terminology.
2. Familiar with common networking standards and protocols.
3. Understand data communication principles.
4. Understand computer network architecture, organization and management.
5. Familiar with Local Area Network organization, design, maintenance, administration.
6. Demonstrate intermediate skill of network programming.
7. Explain wireless networking structure.

**Prerequisites**

COMP 2230 Data Structure, Algorithm Analysis, and Program Design

**Corequisites**

**Recommended Requisites**

**Exclusion Requisites**

**Texts/Materials**

Required text books:

1. Behrouz A. Forouzan, *Data Communications and Networking*, 4th edition, McGraw-Hill, 2007, ISBN 0-07-296775-7

**Student Evaluation**

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| Projects and Assignments | 30% |
| 3 Midterm Exams | 30% (10% each) |
| Final Exam | 40% |

Notes:

1. To pass the course, students must attain **minimum average 50% on ‘project and assignments.’**
2. To pass the course, students must attain **minimum average 50% on ‘midterm exams.’**
3. All assignments, workshop reports, and projects should be handed-in on time. **Late submissions will have 0% of the points.**
4. The instructor may interview or give an exam to one, some, or all students on the project team. A student’s grade may thereby be reduced if the student would appear to have little or no knowledge of the deliverables produced as shown by examinations.
5. The instructor reserves the right to form some or all project teams and to move members from one team to another (including creating a new project for some students to work on)
6. The instructor reserves the right to solely determine a student's mark on a project (that is, peer evaluation may be dispensed with in some cases.)
7. All assessments given for computing science courses are governed by the academic honesty policy of both TRU and the Computing Science Department.
8. Topics could be changed as time permission.

**Course Topics**

**Course Topics**

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| --- | --- | --- |
| Topics | Specific topics |  |
| Fundamental concepts | Motivation, network topologies, network models, the Internet structure, switching, addressing, performance issues | 2 weeks |
| Data communications | Signals and transmission, error detection and protocols | 2 weeks |
| LAN Technologies  (Direct link networks) | MAC protocols, LAN types, switching and forwarding, LAN switches, Ethernet types | 1 week |
| Internet protocol suite  (TCP/IP) | Layering and protocols, interconnection components | 2 weeks |
| Internetworking | IP addressing, subnetting and supernetting, classless routing, logical IP networks, routing algorithms | 4 weeks |
| IPv6 Networks | Basis for the new protocol, IPv6 components, transitioning from IPv4 to IPv6. | 1 week |
| Wireless networks | Basis for wireless networks | 1 week |

**Seminar/Lab**

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| --- | --- |
| Introduction to CANLab, and small lecture on Linux/UNIX | 1 week |
| Introduction to file i/o with C programming language | 1 week |
| TCP/IP socket programming | 2 weeks |
| Selected exercise questions in the text book | 4 weeks |
| Design and implementation of a simple block transfer control protocol (BTCP) and an application layer protocol | 2-3 weeks |
| Packet socket programming | 1 week |
| Design of logical networks | 1 week |

**ACM / IEEE Course Outline Format**

**Knowledge Areas that contain topics and learning outcomes covered in the course**

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| Knowledge Area | Total Hours of Coverage |
| Networking and Communication (NC) | 39 |

**Methods for Prior Learning Assessment and Recognition (PLAR)**

As per Policy Ed. 2- 0

**Use of Technology**

C and Java, UNIX/Linux, Windows