

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: COMP 390		Number of Credits: 3 Course credit policy (105)															
Course Full Title: Data Communications Course Short Title: <i>(Transcripts only display 30 characters. Departments may recommend a short title if one is needed. If left blank, one will be assigned.)</i>																	
Faculty: Faculty of Professional Studies		Department (or program if no department): Computer Information Systems															
Calendar Description: Students will explore the ideas, methods, and standards for the exchange of information, and the layers, interfaces, protocols, and services on the OSI reference model and TCP/IP protocol suite. Network algorithms, design and tradeoffs, and performance analysis are emphasized. Note: Students with credit for CIS 390 cannot take this course for further credit.																	
Prerequisites (or NONE):		Admission to the Bachelor of Computer Information Systems or the Bachelor of Science with Computing Science major, MATH 125, (one of CIS 291, CIS 292, or COMP 251), and (one of STAT 106 or MATH 270/STAT 270). Note: Students accepted to a CIS or Computing Science minor may register with permission of the department.															
Corequisites (if applicable, or NONE):		None															
Pre/corequisites (if applicable, or NONE):		None															
Antirequisite Courses <i>(Cannot be taken for additional credit.)</i> Former course code/number: CIS 390 Cross-listed with: Dual-listed with: Equivalent course(s): CIS 390 <i>(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)</i>		Special Topics <i>(Double-click on boxes to select.)</i> This course is offered with different topics: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <i>(If yes, topic will be recorded when offered.)</i>															
		Independent Study If offered as an Independent Study course, this course may be repeated for further credit: <i>(If yes, topic will be recorded.)</i> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit															
		Transfer Credit Transfer credit already exists: <i>(See bctransferguide.ca.)</i> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Submit outline for (re)articulation: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <i>(If yes, fill in transfer credit form.)</i>															
Typical Structure of Instructional Hours <table border="1"> <tr> <td>Lecture/seminar hours</td> <td>45</td> </tr> <tr> <td>Tutorials/workshops</td> <td></td> </tr> <tr> <td>Supervised laboratory hours</td> <td></td> </tr> <tr> <td>Experiential (field experience, practicum, internship, etc.)</td> <td></td> </tr> <tr> <td>Supervised online activities</td> <td></td> </tr> <tr> <td>Other contact hours:</td> <td></td> </tr> <tr> <td>Total hours</td> <td>45</td> </tr> </table>		Lecture/seminar hours	45	Tutorials/workshops		Supervised laboratory hours		Experiential (field experience, practicum, internship, etc.)		Supervised online activities		Other contact hours:		Total hours	45	Grading System <input checked="" type="checkbox"/> Letter Grades <input type="checkbox"/> Credit/No Credit	
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Labs to be scheduled independent of lecture hours: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Maximum enrolment (for information only): 35 Expected Frequency of Course Offerings: Once per year <i>(Every semester, Fall only, annually, etc.)</i>															
Department / Program Head or Director: Talia Q		Date approved: December 2028															
Faculty Council approval		Date approved: December 7, 2018															
Dean/Associate VP: Tracy Ryder Glass		Date approved: December 7, 2018															
Campus-Wide Consultation (CWC)		Date of posting: February 22, 2019															
Undergraduate Education Committee (UEC) approval		Date of meeting: March 1, 2019															

Learning Outcomes:

Upon successful completion of this course, students will be able to:

- Compare the OSI model and the TCP/IP suite.
- Apply Nyquist and Shannon Capacity formulae.
- Identify different transmission media and its effective applications.
- Apply the principles of flow control and error control.
- Demonstrate effective use of sliding window protocols.
- Analyze various multiple access protocols.
- Explain different types of Ethernet and their applications.
- Describe the principles of circuit-switching and packet-switching networks.
- Analyze the delays and throughput of LANs and WANs.
- Evaluate various routing protocols and strategies.
- Identify the important concepts of congestion control.
- Analyze TCP and UDP protocols and their performance.

Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

Typical Instructional Methods (*Guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion.*)

Lectures

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials (*If more space is required, download Supplemental Texts and Resource Materials form.*)

Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1. Tanenbaum, A.S.	Computer Networks	<input checked="" type="checkbox"/>	Prentice Hall	
2. Stallings, W.	Data and Computer Communications	<input checked="" type="checkbox"/>	Prentice Hall	
3. Kurose, J.F. & Ross, K.W.	Computer Networking: A Top-Down Approach	<input checked="" type="checkbox"/>	Addison Wesley	
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		

Required Additional Supplies and Materials (*Software, hardware, tools, specialized clothing, etc.*)

A basic scientific calculator.

Typical Evaluation Methods and Weighting

Final exam:	45%	Assignments:	15%	Field experience:	%	Portfolio:	%
Midterm exam:	20%	Project:	%	Practicum:	%	Participation:	10%
Quizzes/tests:	10%	Lab work:	%	Shop work:	%	Total:	100%

Details (if necessary):**Typical Course Content and Topics**

1. Introduction and overview — OSI Reference Model, TCP/IP protocols
2. The Physical Layer — Fourier Series, Nyquist and Shannon Capacity formulae, Bandwidth, Baseband, Passband
3. The Data Link Layer — Design Issues, Sliding Window Protocols, Multiple Access Protocols, Principles of Error and Flow Control, High-Level Data Link Control
4. LAN (Local Area Networks) — LAN architecture, Bus/Tree LANs, Ring LANs, Star LANs, Wireless LANs
5. LAN Systems — Design of Ethernet Networks
6. Internetworking — Principles of Bridge and Switch Operations
7. The Network Layer — Design Issues, Routing Algorithms, Congestion Control Algorithms
8. Transport Layer — TCP, Error and Flow Control, UDP protocols, Performance Issues