CEG 3185 – Introduction to Data Communications & Networking

Professor:	Dr. Abbas Yongacoglu, *P.Eng.* Room CBY A-715, Tel: 562 5800 ext. 6228, yongac@uottawa.ca
website:	http://www.eecs.uottawa.ca/~yongacog/courses/ceg3185
Assistants:	Suzan Ureten (suret057@uottawa.ca), Peng Sun (psun044@uottawa.ca), Li Chao (Cli026@uottawa.ca)

Lectures:
Tuesday,	11:30 – 12:50	CBY B012
Friday,	13:00 – 14:20	CBY B012

Labs: Wednesday,   13:00 – 14:30   CBY B402

Tutorials Thursday,   11:30 – 12:50 CBY B012

Office Hours: Thursday, 13:00 – 15:00. Send me an email for an appointment outside office hours.

Textbook: W. Stallings, "Data and Computer Communications", 10th edition, Prentice Hall 2010, TK 5105.S73, 2007. Both 8th and 9th edition can be used if a student already has one of them. However it is the student's responsibility to check the differences.

References:
1. B.A. Forouzan, "Data Communications and Networking", 2nd Ed., McGraw-Hill, TK 5105 .F6617 2007
2. J. Walrand, "Communication Networks", 2nd Ed., McGraw-Hill, TK5105.5 W35 1998
3. F. Halsall, "Data Communications ..", 4th Ed., Addison-Wesley, TK5105.H35 1996
4. A. S.Tanenbaum, "Computer Networks", 3rd Ed, Prentice-Hall, TK 5105.5 .T36 1996
5. Leon-Garcia, Widjaja, "Communication Networks", McGraw-Hill, TK5101.L46 2000

Prerequisites: MAT2377 (Probability and Statistics for Engineers) or ELG3126

Grading:
Quizzes:	8 %
Labs:	8 %
Assignments	8 %
Midterms	24 % (better mt 15%, worse mt 9%)
Final Exam:	50 %
Attend/Participate	4%
Marking bonus	3%
Max:	105%

Quizzes: The dates for the quizzes are: **May 16** and **June 17**

Midterms: The dates for the midterm test are **June 3** and **July 8.** Each test will be 80 minutes.

Exam Policy: Midterms and the final exam will be closed book. Necessary information will be appended to the exam booklets. Only standard, non-programmable calculators will be allowed in quizzes and exams.
For absences due to health related issues you need a medical certificate from the University Health Services. I will not accept notes from family doctors. The mark for a missed midterm or quiz is zero. If you will miss an exam due to an emergency, try to send an email to me. In case of a traffic accident, bring a police report. For personal events planned well in advance (e.g. wedding of a sibling), consult with me early in the semester.

Academic Fraud: As future engineers, you are expected to conform to the high ethical standards of our profession. During exams and quizzes we will be vigilant and I strongly urge you not to attempt any cheating that might give you an advantage over your classmates.

Plagiarism: As engineers you will cooperate with your colleagues. Hence teamwork and discussions with your classmates are natural part of your learning. However copying from someone else and submitting identical or nearly identical solutions is and will be treated as plagiarism. Every student is expected to submit his/her own individual solutions.

ATTENDANCE (taken from Faculty rules and regulations)
1. Attendance at all lectures and laboratory periods is required; absence is excused only on account of illness (medical certificate required) or by special permission of the dean.

2. To be admitted to the final examination in a subject, a student must attend a minimum of 80% of classes and must not have more than five unauthorized or unjustified absences in that subject.
3. Any absence must be explained in writing to the professor of the course within one week of the student's return; such absence will otherwise automatically be considered as unauthorized. Absence caused by serious or prolonged illness should be reported to the dean's office with a supporting written statement from the University of Ottawa Health Services. In all cases, the faculty may accept or reject the reasons put forth.
4. A student cannot withdraw from a course by no longer attending class; the student must first submit a modification of registration form to the academic secretariat, dean's office or department before the deadline. Failure to do so will result in an automatic INC (F) on the student's transcript.

Assignments: All homework assignments are to be completed on your own. You may consult with other students in the current class regarding the conceptualization of the problem and possible methods of solution, but you may not share details, whether in the form of scrap work, final write-ups, or computer code. All written and programming work is to be generated by you working alone. You are not allowed to discuss the problem set with students who have taken the class previously, nor anyone else who has significant knowledge of the problem set. You are also not allowed to possess, look at, use, or in anyway derive advantage from existing solutions that you may come across.

The cover page of every homework assignment should contain the following statement and your signature, otherwise you may lose up to 50% of the assignment mark. "This assignment is my own work. I did not receive any help from any one, and I did not use any existing solutions in preparing this assignment."

Labs: Labs usually start in the 3rd week of classes. Usually you have a lab session every week. Some labs take two weeks. If you complete and show your work to the TA in the first week, you need not attend the second week. Detailed info on labs will be put on the web and/or discussed in class and in emails.

Tutorials: Tutorials usually start in the 3rd week of classes.

Course objectives: to learn
1. basic concepts of signals,
2. basic concepts of information theory,
3. computer communication principles,
4. communication network structures and architectures,
5. network switching techniques**.**

CALENDAR DESCRIPTION
Overview of computer networking, communication and transmission systems. Physical layer: introduction to Fourier analysis and signal impairments; basics of information theory, channel capacity, analog and digital data transmission, signal encoding. Data link layer protocols and multiplexing. Medium Access Control, framing, error control, flow/congestion control and their algorithms. Network layer: circuit vs. packet switching, asynchronous transfer mode, routing algorithms. Internet architectures and protocols. LAN architectures. Introduction to Wireless LANs.

Outline :
Overview of data communications (Ch.1)
Protocols and Architecture (Ch.2)
Data Transmission (Ch.3)
Transmission Media (Ch.4)
Data Encoding (Ch.5)
Concepts of Information Theory (from course notes)
Digital data communication techniques (Ch. 6)
Data Link Control (Ch.7)
Multiplexing (Ch. 8)
Local area network overview and high-speed LANS (Ch. 15 & 16)
Circuit switching and packet switching (Ch. 10)
Congestion control in data networks (Ch. 13)
Internetwork protocols (Ch. 18)
Routing and routing protocols (Ch. 12 & 19)
Other topics and reviews