

# COSC 328 – TCP/IP Networks

## Spring 2007 (Term 2)

**Instructor:** Dr. Ramon Lawrence  
**Class Schedule:** 2:00 p.m. – 3:30 p.m. Tuesday and Friday  
**Location:** SCI 396  
**Lab time/location:** 12:00 p.m. – 2:00 p.m. Fridays at SCI 234  
**Office Hours:** 10:00 a.m.– 12:00 p.m. Tuesday and Wednesday  
**Office Location:** SCI 263  
**Phone:** 807-9390  
**E-mail:** [ramon.lawrence@ubc.ca](mailto:ramon.lawrence@ubc.ca) (preferred contact method)  
**Course URL:** <http://people.ok.ubc.ca/rlawrenc/teaching/328/>

### Course Description

**Official Calendar:** TCP/IP (Transmission Control Protocol/Internet Protocol) network. Topics include: TCP/IP protocol stack, IP addressing, routing, subnetting/supernetting, internetworking, network diagnostics, network security, and more advanced network administration within the Unix/Linux environment. OUC equivalent: COSC 328.

**Specific description:** This course provides an introduction to computer networks with a focus on the Internet. The core concepts are covered according to the 5 layers of the Internet: application, transport, network, link, and physical. The discussion begins with describing the top-level application layer and the numerous applications supported by the Internet. Then, each lower layer is presented to illustrate how the applications are supported. Core topics include routing, addressing, protocols, connections, congestion control, and error handling. Additional topics covered are local area networks, wireless networks, security, multimedia transmission, and network management. Students will use network tools and construct network-based programs in the lab assignments.

### Prerequisites

- COSC 211 – Machine Architecture
- COSC 222 – Computer Data Structures

### Marking and Evaluation

|                        |                                       |
|------------------------|---------------------------------------|
| <b>Lab Assignments</b> | <b>25 %</b>                           |
| <b>Midterm Exam</b>    | <b>25 %</b> (75 minutes in class)     |
| <b>Final Exam</b>      | <b>50 %</b> (cumulative, three hours) |

**No late assignments will be accepted.**

### Textbook

James F. Kurose and Keith W. Ross, *Computer Networking: A Top-Down Approach Featuring the Internet*, Pearson, 3<sup>rd</sup> edition, ISBN 0-321-22735-2.

## Expectations

- I expect students to attend **all** classes and prepare before attending class. This includes reading relevant sections of the textbook and reviewing notes from previous lectures.
- I recommend all students read a copy of the lecture notes **before** the lecture.
- I expect all students to undertake sufficient effort to produce all the programming assignments.
- I want all students to enjoy attending class and feel free to participate according to their own personalities. Feel free to ask questions by raising your hand or speaking out at appropriate times.
- Please actively participate in class discussions, questions, and problem solving exercises.
- **I want all students to pass the course, receive a good grade, and feel the course was beneficial.**

## Homework Expectation

For this course, it is expected that you will spend *at least six hours per week in out-of-class preparation*.

## Grievances and Complaints Procedures

A student who has a complaint related to this course should follow the procedures summarized below.

- The student should attempt to resolve the matter with the instructor first. Students may talk first to someone other than the instructor if they do not feel, for whatever reason, that they can directly approach the instructor.
- If the complaint is not resolved to the student's satisfaction, the student should go to the departmental chair Cynthia Mathieson, at ART 300, 807-8730.

## Your Responsibilities

Your responsibilities to this class and to your education as a whole include attendance and participation. You have a responsibility to help create a classroom environment where all may learn. At the most basic level, this means you will respect the other members of the class and the instructor and treat them with the courtesy you hope to receive in return. Inappropriate classroom behavior may include: disruption of the classroom atmosphere, engaging in non-class activities, talking on a cell-phone, inappropriate use of profanity in classroom discussion, use of abusive or disrespectful language toward the instructor, a student in the class, or about other individuals or groups.

## Academic Dishonesty

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the break down of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course. Careful records are kept in order to monitor and prevent recidivism. A more detailed description of academic integrity, including the policies and procedures, may be found at <http://web.ubc.ca/okanagan/faculties/resources/academicintegrity.html>. **If you have any questions about how academic integrity applies to this course, please consult with your professor.**

## Students with Disabilities

If you require disability related accommodations to meet the course objectives please contact the Coordinator of Disability Resources located in the Student development and Advising area of the student services building. For more information about Disability Resources or about academic accommodations visit <http://okanagan.students.ubc.ca/current/disres.cfm>.

## Missing an Exam

Only students who miss the final exam for a reason that corresponds to the University of British Columbia Okanagan's policy on excused absences from examinations will be permitted to take the final exam at a later time. A make-up exam may have a question format different from the regular exam. **There will be no make-up midterm exams.** If the reason for absence is satisfactory, the student's final exam will be worth more of the final grade.

## Course Outline

Below is an outline of the topics. The professor is not bound to the topics and timelines provided.

| Date            | Topics Covered and Description                                   |
|-----------------|--|
| January 9 (T)   | <b>First day of classes. Introduction to course.</b>             |
| January 12 (F)  | Overview of Networks and the Internet (Chapter 1)                |
| January 16 (T)  | Overview of Networks and the Internet (cont.)                    |
| January 19 (F)  | Application Layer: Internet Applications (Chapter 2)             |
| January 23 (T)  | Application Layer: Internet Applications (cont.)                 |
| January 26 (F)  | Application Layer: Internet Applications (cont.)                 |
| January 30 (T)  | Transport Layer (Chapter 3)                                      |
| February 2 (F)  | Transport Layer (cont.)  |
| February 6 (T)  | Transport Layer (cont.)  |
| February 9 (F)  | Network Layer (Chapter 4) <b>Midterm exam review.</b>            |
| February 13 (T) | <b>Midterm exam in class.</b>                                    |
| February 16 (F) | Network Layer (cont.)  |
| February 20 (T) | <b>No class during midterm break.</b>                            |
| February 23 (F) | <b>No class during midterm break.</b>                            |
| February 27 (T) | Network Layer (cont.)  |
| March 2 (F)     | Link Layer and LANs (Chapter 5)                                  |
| March 6 (T)     | Link Layer and LANs (cont.)                                      |
| March 9 (F)     | Link Layer and LANs (cont.)                                      |
| March 13 (T)    | Wireless Networks (Chapter 6)                                    |
| March 16 (F)    | Wireless Networks (cont.)  |
| March 20 (T)    | Multimedia Transmission (Chapter 7)                              |
| March 23 (F)    | Multimedia Transmission (cont.)                                  |
| March 27 (T)    | Security (Chapter 8)   |
| March 30 (F)    | Security (cont.)   |
| April 3 (T)     | Network Management (Chapter 9)                                   |
| April 6 (F)     | <b>No class or lab on Good Friday.</b>                           |
| April 10 (T)    | <b>Last day of class. Final exam review. Course evaluations.</b> |

**Laboratory times:** The laboratory time will be spent performing lab assignments. Each lab will have a defined topic with the majority of labs involving network programming or implementation.

| Week | Dates            | Topics Covered and Description                 |
|------|------------------|--|
| 1    | January 8 – 12   | <b>No Labs First Week of Class.</b>            |
| 2    | January 15 – 19  | <b>Lab 1: Network Introduction</b>             |
| 3    | January 22 – 26  | <b>Lab 2: Application Layer</b>                |
| 4    | Jan. 29 – Feb. 2 | <b>Lab 3: Application Layer</b>                |
| 5    | February 5 – 9   | <b>Lab 4: Transport Layer</b>                  |
| 6    | February 12 – 16 | <b>Lab 5: Transport Layer</b>                  |
| 7    | February 19 – 23 | <b>No Labs During Midterm Break.</b>           |
| 8    | Feb. 26 – Mar. 2 | <b>Lab 6: Network Layer</b>                    |
| 9    | March 5 – 9      | <b>Lab 7: Link Layer</b>                       |
| 10   | March 12 – 16    | <b>Lab 8: Wireless Networks</b>                |
| 11   | March 19 – 23    | <b>Lab 9: Network Management</b>               |
| 12   | March 26 – 30    | <b>Lab 10: Putting it All Together</b>         |
| 13   | April 2 – 6      | <b>Lab 11: Putting it All Together (cont.)</b> |
| 14   | April 9 – 13     | <b>No Labs Last Week of Class.</b>             |