



mic Studies
A POLYTECHNIC INSTITUTION
Option: Bachelor of Technology, Computer Systems

Course Number: COMP 8505
Course Name: Selected Topics in Network Security Development

Start Date: April 27, 2010

End Date: July 13, 2010

Total Hours: **Total Weeks:**
Hours/Week: 3.75 **Lecture: 1.25** **Lab: 2.5**

Term/Level: 1 **Course Credits: 3**

Prerequisites:

Dip. Of Tech in Computer Systems (or equivalent) or Permission of instructor and Program Head

Course No.	Course Name
COMP 8005	Data Communication Applications

Course No.	Course Name
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• **Course Description:**

This course is a study of topics of particular interest to advanced B. Tech students in the area of Network software development and Network security. The focus will be on the research and application of advanced TCP/IP programming techniques and covert channels.

• **Course Goals**

- The primary goal of this course is to get students to apply all the knowledge and skills acquired in Comp 7005 and Comp 8005 in a practical, hands-on manner.
- Conduct an in-depth study of specific and highly specialized areas in Network Programming and secure coding practices.
- Understand the role of covert channels and backdoor programs in networks.
- Design and implement covert channels, Trojans, and backdoor programs.
- Implement a substantial project in the selected area, and produce an application or project report or both upon completion.

v **Evaluation**

Final Exam:	15%	Comments: The breakdown of evaluation components will be discussed in class.
Assignments and Projects:	85%	
TOTAL	100%	

v Course Learning Outcomes/Competencies

Upon successful completion, the student will be able to:

1. Design and implement a variety of covert channels and network surveillance software.
2. Conduct advanced research into specific and specialized areas in Data Communications such as network security and securing applications.
3. Develop strategies for imaginative and practical solutions for software development problems using custom designed code.
4. Apply and understand the usefulness (i.e., non-malicious use) of applications such as backdoors and port knocking.

v Verification

I verify that the content of this course outline is current.
Aman Abdulla

April 23, 2010

Authoring Instructor

Date

I verify that this course outline has been reviewed.

Program Head/Chief Instructor

Date

I verify that this course outline complies with BCIT policy.

Dean/Associate Dean

Date

Note: Should changes be required to the content of this course outline, students will be given reasonable notice.

v Instructor(s)

Office Location: SW2-323
Office Hrs.:

Office Phone: 604-432-8837
E-mail Address: aabdulla@milliways.bcit.ca

v Learning Resources

Required:

Students will be required to conduct extensive research on the topics introduced in class using the Internet and other reference material.

Recommended:

The Shellcoders Handbook – Koziol et al
Wiley Publishers

Rootkits – subverting the Windows kernel – Hoglund & Butler
Addison-Wesley Publishers

Sockets, Shellcode, Porting & Coding – Foster & Price
Syngress

v Information for Students

By attending this course and receiving this course outline, you have been made aware of the following policies. Please follow the links provided as each student is responsible for reading and complying with these policies.

The following statements are in accordance with the *BCIT Student Regulations Policy 5002*. To review the full policy, please refer to <http://www.bcit.ca/files/pdf/policies/5002.pdf>.

Attendance/Illness:

In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with his/her instructor or Program Head or Chief Instructor, indicating the reason for the absence. Prolonged illness of three or more consecutive days must have a BCIT medical certificate sent to the department. Excessive absence may result in failure or immediate withdrawal from the course or program.

Academic Misconduct:

Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances are prohibited and will be handled in accordance with the *Violations of Standards of Conduct* section of Policy 5002.

The School of Computing and Academic Studies expects the highest level of professional conduct and ethical behaviour from all students enrolled in part time studies courses and programs. All students are reminded of the BCIT policy related to the *Responsible Use of Information Technology*. Read the full policy here: <http://www.bcit.ca/files/pdf/policies/3501.pdf>.

The Computing and IT knowledge and skills acquired by students in the course of their studies confers upon them, as with all professionals, a special responsibility to use their knowledge in a responsible, professional and ethical manner. Further, given that misuse of computer facilities at BCIT can have significant legal and/or economic impacts, upon evidence of any such misconduct, the School may recommend immediate suspension, even for first offences.

Attempts:

Students must successfully complete a course within a maximum of three attempts at the course. Students with two attempts in a single course will be allowed to repeat the course only upon special written permission from the Associate Dean. Students who have not successfully completed a course within three attempts will not be eligible to graduate from their respective program.

Accommodation:

Any student who may require accommodation from BCIT because of a physical or mental disability should refer to BCIT's Policy on Accommodation for Students with Disabilities

(<http://www.bcit.ca/files/pdf/policies/4501.pdf>), and contact BCIT's Disability Resource Centre (SW1-2300, 604-451-6963, <http://www.bcit.ca/drc/>) at the earliest possible time. Requests for accommodation must be made to the Disability Resource Centre, and should not be made to a course instructor or Program area.

Any student who needs special assistance in the event of a medical emergency or building evacuation (either because of a disability or for any other reason) should also promptly inform their course instructor(s) and the Disability Resource Centre of their personal circumstances.

Course Notes:

- Notes will be posted on my Web server which you may access using the following URL:

<http://milliways.bcit.ca/c8505/>

v Assignment Details :

- There will be several assignments throughout the course and a final project (to be discussed in class).

Schedule

Topic Number	Outcome/Material Covered
1	Stealth Software: <ul style="list-style-type: none">• Covert TCP/IP Channels.• Buffer overflows and backdoors.• Concealing services (Port Knocking)
2	Shellcode: <ul style="list-style-type: none">• Introduction• Basic Examples• Binding shells to ports
3	Miscellaneous Topics: <ul style="list-style-type: none">• As required during the course of the term.

****Topics may be omitted, replaced or added at the discretion of the instructor.**