*Course Outline*

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

***Course Number:* COMP 7006**
***Course Name:* Network Security and Administration Level 1**

---

**Start Date:** September 8, 2009 **End Date:** December 8, 2009

**Total Hours:** **Total Weeks:** **Term/Level: 1** **Course Credits: 3**
**Hours/Week: 3.75** **Lecture: 1.25** **Lab: 2.5**

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

| Course No. | Course Name | Course No. | Course Name |
|---|---|---|---|

---

**ν Course Description:**

Introduction to networking and cross-platform file sharing using Win32 and Linux tools. Students will learn the basics of NFS, SAMBA, and Apache. Students will learn basic shell scripts use system tools such as ***cron*** to activate and execute scripts and programs. In-depth coverage of TCP/IP and "real-world" network traffic analysis using tools such as packet sniffers and ***tcpdump***. Introduction to securing servers and services, system monitoring for performance and intrusion.

- **Evaluation**

| | | |
|---|---|---|
| Theoretical Final Examination: | 20% | Comments: |
| Practical Final Examination: | 40% | |
| Lab Quizzes & Assignments: | 40% | |
| TOTAL | 100% | |

- **Course Learning Outcomes/Competencies**

1. Facilitate an understanding of LANs that emphasizes practical design and implementation.
2. Configure and test cross-platform networking applications such as **SAMBA** and **NFS**.
3. Configure and test web services such as **Apache**.
4. Create and manage a system of user accounts and files on Linux.
5. Analyze network traffic using tools such as ***tcpdump*** and other packet sniffers such as **Wireshark**.
6. Understand system initialization issues and be able to manipulate the configuration files related to the setup and initialization of networking components.
7. Understand and design shell scripts.
8. Understand and configure system utilities such as ***cron*** to automate system tasks.
9. Secure system services using simple utilities such as **TCP Wrappers** and the ***xinetd*** super daemon.
10. Configure and use tools such as ***ps***, ***top***, ***lsof***, and ***netstat***, to monitor systems for performance as well as intrusion.
11. Provide the student with a solid foundation for more advanced courses such as Comp 8006 - network Administration and Security.

---

## ν Verification

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

| Aman Abdulla | September 3, 2009 |
|---|---|
| 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 |

## ν Instructor(s)


| | | | | |
|---|---|---|---|---|
| Aman Abdulla | Office Location: | SW2-323 | Office Phone: | 604-432-8837 |
| | Office Hrs.: | | E-mail Address: | aabdulla@milliways.bcit.ca |


## ν Learning Resources

***Required*:**

- HOWTO Documentation (http://www.tldp.org/)
- Man Pages

***Recommended:***

TCP/IP Protocol Suite
Forouzan, Behrouz, 2nd Edition

Linux Administration Handbook
Nemeth et al
Prentice-Hall

- **Information for Students**

**Assignments:** Late assignments, lab reports or projects will **not** be accepted for marking. Assignments must be done on an individual basis unless otherwise specified by the instructor.

**Makeup Tests, Exams or Quizzes:** There will be **no** makeup tests, exams or quizzes. If you miss a test, exam or quiz, you will receive zero marks. Exceptions may be made for **documented** medical reasons or extenuating circumstances. In such a case, it is the responsibility of the student to inform the instructor **immediately**.

**Ethics:** BCIT assumes that all students attending the Institute will follow a high standard of ethics. Incidents of cheating or plagiarism may, therefore, result in a grade of zero for the assignment, quiz, test, exam, or project for all parties involved and/or expulsion from the course.

**Attendance:** The attendance policy as outlined in the current BCIT Calendar will be enforced.

The following statements are in accordance with the BCIT Policies 5101, 5102, 5103, and 5104, and their accompanying procedures. To review these policies and procedures, please refer to: www.bcit.ca/about/administration/policies.shtml

**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. Please see Policy 5101 — Student Regulations, and accompanying procedures: http://www.bcit.ca/files/pdf/policies/5101.pdf

**Academic Misconduct:**
Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances are prohibited and will be handled in accordance with Policy 5104 — Academic Integrity and Appeals, and accompanying procedures: http://www.bcit.ca/files/pdf/policies/5104.pdf

**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 (Policy #4501), and contact BCIT's Disability Resource Centre (SW1-2300, 604-451-6963) 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.

- **Assignment Details:** Will be provided in class

## Schedule

| Topic Number | Outcome/Material Covered |
|---|---|
| *1 | **Introduction:**<br>• Network Architecture<br>• Subnet design issues<br>• The OSI Reference Model |
| 2 | **Introduction to TCP/IP**:<br>• Overview of TCP/IP<br>• TCP/IP in LANs<br>• Naming, Addressing, and Routing |
| 3 | **Implementation of a TCP/IP System:**<br>• TCP/IP Structure<br>• The TCP/IP Family of Protocols<br>• Routing Tables and Algorithms<br>• The Domain Name System (DNS) |
| 4 | **Introduction to Linux**<br>• Basic shell usage<br>• Configuring the Apache Web Server |
| 5 | **Win32 and Linux Integration:**<br>• NFS - Configuration and Installation<br>• SAMBA - Configuration and Installation |
| 6 | **Shell Scripts and Task Automation**<br>• Basic shell scripting<br>• Using ***cron*** and **crontab** |
| 7 | **Traffic Monitoring and Analysis**<br>• Traffic Monitoring using ***tcpdump*** and **Wireshark**<br>• Writing basic tcpdump filters |
| 8 | **Monitoring and Securing Servers and Services**<br>• Configure and use TCP Wrappers and ***xinetd***<br>• System Monitoring tools: ***ps, top, netstat, lsof***, etc.<br>• Verifying the TCP/IP components<br>• Maintenance and debugging issues |

* Self study module

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

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

  http://milliways.bcit.ca/c7006/