Course Outline

mic Studies
A POLYTECHNIC INSTITUTION chnology
Option: Data Communication and Internetworking

Course Number: 3980
Course Name: Data Communications/ Networks 1

Start Date: September 2 - 2008 **End Date:** December 5-2008

Total Hours: **Total Weeks:** **Term/Level: 5** **Course Credits: 5**
Hours/Week: 5 **Lecture:** 2 **Lab: 3**

Prerequisites:

Successful completion of first year CST and admission into the Data Communications option. Ability to apply technical principles to problem analysis and implement software solutions. Strong interest in computer hardware, and low level (system) programming (C/C++).

Course No.	**Course Name**	**Course No.**	**Course Name**

Course Description:

Introduces LAN installation and administration using Linux and Win32. Basic serial data communications programming using synchronous and asynchronous techniques and the Windows Serial API. Win32 systems programming and multithreaded programming. Interfacing to Communications hardware such as RFID receivers. Implementation of bit and character-oriented protocols. Introduction to wireless data communication and implementation of error detection/correction algorithms. Introduction to Linux server services deployment and security.

Evaluation

Final Examination:	25%	Comments:
Assignments & Projects:	60%	
Linux Admin:	15%	
TOTAL	100%	

Course Learning Outcomes/Competencies

Upon successful completion, the student will:

- Understand communications hardware and its interface to communications software.
- Design and develop console and GUI based Win32 applications.
- Design programs using Win32 threads, synchronization objects, and Overlapped I/O.
- Develop Win32 serial communications software in C/C++.
- Design and Develop communication software for use on wireless systems.
- Implement Win32 applications for reading RFID data.
- Understand and use basic error detection/correction techniques.
- Perform System Administration tasks on the Linux/Win32 LANs.

Verification

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

Aman Abdulla — September 1, 2008

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.

Instructor

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

Learning Resources

***Required*:**

Win32 System Programming, 3/e By Hart
Addison Wesley ISBN 978-0-321-25619-5

Win32 Programming,
Rector
ISBN 978-0-201-63492-1

A C/C++ compiler conforming to the ANSI Standard:
Suggested compilers:
- Microsoft Visual Studio .NET

The **LINUX** operating system:
- Details to be provided in class.

Connectors, Shielded Instrumentation and Computer cable (at least 6 ft), 24 AWG, 10 conductor. Details to be provided in class.

Recommended:

Programming Windows By Charles Petzold (Fifth Edition)
Microsoft Press ISBN 1-55615-676-6

ν Information for Students

(*Information below can be adapted and supplemented as necessary.*)

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. Attendance will be taken at the beginning of each session. Students not present at that time will be recorded as absent.

Illness: A doctor's note is required for any illness causing you to miss assignments, quizzes, tests, projects, or exam. At the discretion of the instructor, you may complete the work missed or have the work prorated.

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 the appropriate program.

Course Outline Changes: The material or schedule specified in this course outline may be changed by the instructor. If changes are required, they will be announced in class.

Labs: Lab attendance is mandatory. Lab exercises are due at the end of the lab period.

I.D. Required in Examination Centres: Effective December 2000, in order to write exams, students will be required to produce photo-identification at examination centres. Photo I.D. must be placed on the desk before an exam will be issued to the student. The I.D. must remain in view on the desk while writing the exam, for inspection by invigilators. Students should bring a BCIT OneCard or alternatively two pieces of identification, one of which must be government photo I.D. such as a driver's licence. Please see BCIT Policy #5300, Formal Invigilation Procedures.

Computer Use Policy: BCIT has an Institute-wide policy (#3501) pertaining to information technology and services and to the resources available in support of the Institute mission. Computer Systems Technology students are expected to exercise the highest degree of professionalism and ethical behaviour related to information technology. Violations of BCIT Policy #3501 will result in disciplinary action which may include suspension or expulsion of students. Also refer to the Computer Systems Technology Student Conduct Guidelines.

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

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

Schedule

Topic Number	Outcome/Material Covered
1	**Introduction to Data Communications Equipment:** • Serial Ports • Modems • Test Equipment
2	**PC Communications Hardware:** • RS –232 Interface • UART • Polling vs. Interrupts
3	**Windows Programming Issues:** • Console and GUI Programming • Windows Events and Messages • Multitasking and Multithreading
4	**Terminal Emulation, Protocol implementation**
5	**Principles of wireless data communication:** • Fundamentals of RF propagation • Fading and BER
7	**Introduction to Error Detection/Correction techniques**
8	• **Linux System Administration Issues**

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

  http://milliways.bcit.ca/c3980/