BCIT®

A POLYTECHNIC INSTITUTION

Course Outline

School of Manufacturing, Electronics and Industrial Processes
Program: Technology Teacher Education
Option:

**MATH 4943**
**Advanced Mathematics for TTED**

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**Start Date:** January 4, 2006 **End Date:** May 27, 2006

**Total Hours:** 40 **Total Weeks:** 20 **Term/Level:** 2 **Course Credits:** 3
**Hours/Week:** 2 **Lecture:** 2 **Lab:** **Shop:** **Seminar:** **Other:**

**Prerequisites**

| Course No. | Course Name |
|---|---|
| MATH 3942 | Math Foundations for TTED or permission of instructor |

**MATH 4943 is a Prerequisite for:**

| Course No. | Course Name |
|---|---|
| None | |

## ◆ Course Description

A continuation of MATH 3942. Topics include radians; right-angle trigonometry; binary and other number systems; manipulating power, exponential and radical expressions and equations; factoring; solving quadratic equations; rational expressions; solving inequalities and systems of equations; solving mixture, investment and other word problems.

## ◆ Detailed Course Description

The goals of this course are to:

- develop skill at defining, solving and presenting technology problems using the basic mathematical skills of this course and in view of eventual computer assistance.
- relate high school math to trades and technologies for teaching insight.

## ◆ Evaluation

| | |
|---|---|
| Final Examination | 35% |
| Term Tests (2) | 40% |
| Quizzes (2) | 15% |
| Assignments (1) | 10% |
| TOTAL | 100% |

Comments: Minimum passing grade for this course is 50%.

## ◆ Course Learning Outcomes/Competencies

Upon successful completion, the student will be able to:

1. solve various oblique triangle situations from technology; change angle units.
2. simplify rational expressions.
3. solve various linear, quadratic, power, exponential and log equations as they occur in technology and trades.
4. appreciate mathematical relations and functions as they apply to technology.

### ◆ Course Learning Outcomes/Competencies (cont'd.)

5. understand the rudiments of "break-even" analysis.
6. solve systems of equations in two variables, graphically and algebraically.
7. understand the rudiments of inequality systems and performance envelopes.

### ◆ Verification

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

Erik Korolenko — Authoring Instructor — Jan 4, 2006 — Date

I verify that this course outline has been reviewed.

Louise Poutlet — Program Head/Chief Instructor (Math) — Jan 4/06 — Date

Program Head/Chief Instructor (Technology) — Jan 4/06 — Date

I verify that this course outline complies with BCIT policy.

Louise Poutlet for Elaine Decker — Dean/Associate Dean (Math) — Jan 4/06 — Date

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

## ◆ Instructor(s)

Erik Korolenko

Office Location: SW2–221
Office Hrs.: Mon: 2:30-3:30
Tue: 9:30-10:30
Tue: 11:30-12:30
Thu: 10:30-12:30

Office Phone: 604-451-7180
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## ◆ Learning Resources

***Text(s) and Equipment:***

*Required*:

A scientific calculator.

*Recommended*:

*Introduction to Technical Mathematics*, Allyn J. Washington, Mario F. Triola

## ◆ Information for Students

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

**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.

**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. In case of illness or any 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. Excessive absence may result in failure or immediate withdrawal from the course or program.

**Illness:** A doctor's note is required for any illness causing you to miss assignments, quizzes, tests, projects or exam. Prolonged illness of three or more consecutive days must have a BCIT medical certificate sent to the department. 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.

## ◆ Information for Students (cont'd.)

**Course Credit:** Applications for course credit or course exemption on the basis of previously completed mathematics courses are assessed on a case-by-case basis by the BCIT Mathematics Dept. taking into account **all** of the following:

- the correspondence between topics, content and level
- recency (generally no more than 3–5 years)
- the grade (generally at least a C+ or 65%)
- the context (course taken as part of a university or college science or engineering program, rather than, for example, an arts or social science program).

**Course Makeup — Equivalents:** In most cases, students who fail a math course or withdraw from a math course may make up the course by taking makeup courses. These courses may be BCIT evening or correspondence courses, or equivalent courses from another institution. In some cases, students may be required to take more than one course or several distance education modules to gain credit. In some cases, students may be required to achieve a mark of greater than 50% in the makeup course in order to achieve credit for the failed course. If a student fails a course, a makeup letter signed by the mathematics program head will be sent to the student, the technology program head, and to Student Records. Any course substitutions would require prior written approval of the mathematics program head.

**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.

**I.D. Required in Examination Centres:** 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 and 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.

## ◆ Assignment Details

Assignments do not need to be completed on a computer but must be neat and clear.

## Schedule

This schedule is subject to change at the discretion of the instructor.

| Week | Topics | Reference/Reading |
|---|---|---|
| 1–3 | Right-angle and oblique trigonometry | Section 15-3, Chapters 16, 17 |
| 4 | Number systems with bases other than 10 | Notes |
| 5–7 | Factoring and solving quadratic equations | Chapters 8, 11 |
| 8 | Rational expressions | Chapter 9 |
| 9, 10 | Review exponentials<br>Introduce logarithms | Chapters 10, 12 |
| 11 | **Spring Break** | |
| 12–14 | Solving equations: linear, quadratic, power, exponential | Notes |
| 15, 16 | Systems of equations | Chapter 14 |
| 17–19 | Inequality systems<br>Performance envelopes | Sections 5-3, 13-5 |
| 20 | **Final Examination** | |