Course Outline

School:	Eng. Tech. & Applied Science
Department:	Mathematics and Physics
Course Title:	Functions & Number Systems
Course Code:	MATH 175
Course Hours/Credits:	42
Prerequisites:	MATH 122
Co-requisites:	N/A
Eligible for Prior Learning, Assessment and Recognition:	Yes
Originated by:	Kieh Wong, Tapan Rai
Creation Date:	Fall 2002
Revised by:	Najam Khaja
Revision Date:	Summer 2015
Current Semester:	Fall 2015
Approved by:	

Chairperson/Dean

Students are expected to review and understand all areas of the course outline.

Retain this course outline for future transfer credit applications. A fee may be charged for additional copies.

This course outline is available in alternative formats upon request.

Course Description

This is a mathematics course dealing with number systems and functions. Students will learn about the fundamentals of algebra, matrices, solving systems of linear equations, and sequences and series. Student will also be familiarized with computer arithmetic involving binary, octal, and hexadecimal bases.

Program Outcomes

N/A

Course Learning Outcomes

The student will reliably demonstrate the ability to:

1. Perform operation on and with real, rational, and irrational numbers.
2. Perform arithmetic operations in the binary, octal, and hexadecimal systems.
3. Solve linear and quadratic equations using various methods.
4. Simplify algebraic expressions using the properties of exponents.
5. Factor algebraic expressions using common factors, trinomial factoring, differences of squares and grouping.
6. Solve systems of linear equations algebraically and with matrices
7. Evaluate and graph linear, trigonometric, exponential and logarithmic functions.
8. Find the term and sum of sequences and series.

Essential Employability Skills (EES)

The student will reliably demonstrate the ability to*:

1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
3. Execute mathematical operations accurately.
4. Apply a systematic approach to solve problems.

**There are 11 Essential Employability Skills outcomes as per the Ministry Program Standard. Of these 11 outcomes, the following will be assessed in this course.*

Global Citizenship and Equity (GC&E) Outcomes

N/A

Text and other Instructional/Learning Materials

Text Book(s):

Mathematical Ideas & MyMathLab, 12th Edition, by Miller, Heeren & Hornsby. Addison-Wesley.

Note: Students may choose to purchase an e-text version with MyMathLab access

ISBN (Print): 0132849860 ISBN (E-text): 0132845571.

Online Resource(s):

Math175 Supplementary Problems (Posted on eCentennial)

MyMathLab Access (needed for Quizzes).

Evaluation Scheme

- Test 1: Covers 6.1, 6.2, 6.3, 6.4, 4.1, 4.2, 4.3, 4.4, Supplement - Computer Arithmetic
- Test 2: 7.1, 7.3, 7.5, 7.6, 7.7, 8.7
- Test 3: 8 Ext, 8.1, 8.4, 8.6, Supplement
- Quizzes: 3 in-class (3@5% each)
  & online quizzes (10%)

Evaluation Name	CLO(s)	EES Outcome(s)	GCE Outcome(s)	Weight/100
Test 1	1, 2	1, 3, 4		25
Test 2	3, 4, 5, 6	1, 3, 4		25
Test 3	6, 7, 8	1, 3, 4		25
Quizzes	1, 2, 3, 4, 5, 6, 7, 8	1, 3, 4		25
Total				100%

If students are unable to write a test they should immediately contact their professor or program Chair for advice. In exceptional and well documented circumstances (e.g. unforeseen family problems, serious illness, or death of a close family member), students may be able to write a make-up test.

All submitted work may be reviewed for authenticity and originality utilizing Turnitin®. Students who do not wish to have their work submitted to Turnitin® must, by the end of the second week of class, communicate this in writing to the instructor and make mutually agreeable alternate arrangements.

When writing tests, students must be able to produce official College photo identification or they may be refused the right to take the test or test results will be void.

Student Accommodation

It is College Policy to provide accommodation based on grounds defined in the Ontario Human Rights Code. Accommodation may include modifications to standard practices. Students with disabilities who require academic accommodations must register with the Centre for Students with Disabilities. Students requiring accommodation based on other human rights grounds should talk with their professors as early as possible. Please see the Student Accommodation Policy.

Use of Dictionaries

- Dictionary use is not permitted in test or examination settings.

Program or School Policies

Testing:

a) No additional time will be allowed for any student who comes late to any test.

b) No student will be allowed to leave during the first half-hour of any test.

c) Unless otherwise stated, no written or other aids may be used during tests. Any student who is found using or having used unauthorized aids will be given a mark of zero for that test. Furthermore, a final

grade of “F” may be given in this course. Every incident of cheating will be reported to the Campus Inquiry Officer and may entail serious consequences.

d) There will be no rewrites of term tests (or exams where applicable).

e) If a particular test cannot be written because of documented medical or compassionate reasons, a makeup test will be scheduled within 5 business days of the date of the evaluation. A mark of zero will be recorded in all cases where no reason (supported by official documentation) acceptable to the professor is provided within 5 business days of the date of the evaluation.

f) All classroom instruction (that require calculators) will be based on the Sharp EL-520. During tests and examinations, students may use an equivalent scientific calculator; however, programmable and/or graphing calculators are prohibited. No other electronic devices will be permitted.

Quizzes:

a) Quizzes can consist of online, in-class announced/unannounced quizzes and/or take home quizzes (assignments).

b) Attendance for classes is mandatory since unannounced quizzes can be given.

c) Dates for announced quizzes will be communicated in class.

d) There are no makeups for quizzes missed or extension of deadlines for online quizzes.

Course Policies

N/A

College Policies

Students should familiarize themselves with all College Policies that cover academic matters and student conduct.

All students and employees have the right to study and work in an environment that is free from discrimination and harassment and promotes respect and equity. Centennial policies ensure all incidents of harassment, discrimination, bullying and violence will be addressed and responded to accordingly.

Academic honesty is integral to the learning process and a necessary ingredient of academic integrity. Academic dishonesty includes cheating, plagiarism, and impersonation. All of these occur when the work of others is presented by a student as their own and/or without citing sources of information. Breaches of academic honesty may result in a failing grade on the assignment/course, suspension or expulsion from the college.

For more information on these and other policies, please visit www.centennialcollege.ca/about-centennial/college-overview/college-policies.

Students enrolled in a joint or collaborative program are subject to the partner institution's academic policies.

PLAR Process

This course is eligible for Prior Learning Assessment and Recognition (PLAR). PLAR is a process by which course credit may be granted for past learning acquired through work or other life experiences. The PLAR process involves completing an assessment (portfolio, test, assignment, etc.) that reliably demonstrates achievement of the course learning outcomes. Contact the academic school to obtain information on the PLAR process and the required assessment.

Semester:	Fall 2015	Professor Name:	Najam Khaja
Section Code:	003	Contact Information:	nkhaja@my.centennialcollege.ca
Meeting Time & Location:	Monday 12:30-2:20pm, L1-06 Wednesday 9:30-10:20am, L1-06	Delivery Method:	Hybrid-online

Topical Outline (subject to change):

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
1	Real Numbers, Order & Absolute Value Operations with Real Numbers	6.1 6.2	Perform operations on and with real numbers.	Lecture, Sample problems,Practice		
2	Rational Numbers and their Decimal Representation Irrational Numbers and their Decimal Representation	6.3 6.4	Perform operations on and with rational numbers. Perform operations on and with irrational numbers.	Lecture, Sample problems, Practice	Online Quiz (1%)	
3	The binary, octal, and hexadecimal system; conversions between bases Addition and subtraction in binary, octal and hexadecimal	4.4 Supplement	Perform arithmetic operations in the binary, octal, hexadecimal systems Convert between different bases.	Lecture, Sample problems, Practice	In-class Quiz 1 (5%) Online Quiz (1%)	9/21/2015
4	Binary Coded Decimals (BCD) code	Supplement	Convert using Binary Coded Decimals	Lecture, Sample problems, Practice Review for Test 1	Online Quiz (1%)	
5	Test 1 Linear Equations	7.1	Solve linear equations	Lecture, Sample problems, Practice	Test 1	10/7/2015
6	Ratio and Proportion Properties of Exponents and Scientific Notation	7.3 7.5	Solve problem with ratio and proportion Apply the properties of exponents Convert between scientific and standard notation	Lecture, Sample problems, Practice	Online Quiz (1%)	
7	Polynomials; Factoring quadratic binomials &	7.6 7.7	Perform operations on and with polynomials. Factor by polynomial expression by a variety of methods (common factoring, trinomial	Lecture, Sample problems, Practice	In-class Quiz 2 (5%) Online Quiz	10/26/2015

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
	trinomials Quadratic Equations		factoring, grouping, difference of squares) Solve quadratic equations.		(1%)	
8	Quadratic Equations Systems of Linear Equations	7.7 8.7	Solve quadratic equations Solve a two variable system of linear equations algebraically	Lecture, Sample problems,Practice	Online Quiz (1%)	
9	Review for Test 2 Test 2	Supplement	Review for test 2	Practice, Class Discussion	Test 2	11/11/2015
10	Matrices and Solving Systems of Equations	Ch 8 Extension	Solve a 2 and 3 variable system of linear equations using matrices (Gauss-Jordan method).	Lecture, Sample problems,Practice	Online Quiz (1%)	
11	The Rectangular Coordinate System; Circles; Distance; Midpoint Introduction to Functions and Relations; Domain and Range; Function Notation; Linear Functions	8.1 8.4	Calculate distance between 2 points. Calculate the midpoint between 2 points. Write an equation of a circle. Identify relations and functions. Identify the domain and range of a function. Evaluate a function.	Lecture, Sample problems,Practice	Online Quiz (1%)	
12	Exponential and Logarithmic Functions Basic Trigonometric Functions: Sine and Cosine	8.6 Supplement	Solve logarithmic and exponential equations. Graph sine and cosine functions.	Lecture, Sample problems,Practice	In-class Quiz 3 (5%) Online Quiz (1%)	11/30/2015
13	Sequences and Series	Supplement	Find the term and sum of sequences and series, respectively.	Lecture, Sample problems,Practice	Online Quiz (1%)	
14	Review for test 3 Test 3	Supplement	Review for test 3.	Practice, Class Discussion	Test 3	12/16/12015