THE SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: Algebra

CODE NO. : MTH121-5 **SEMESTER:** One

PROGRAM: General Arts and Science

AUTHOR: Math Department

DATE: August 2003 **PREVIOUS OUTLINE DATED:** August 2002

APPROVED:

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DEAN **DATE**

TOTAL CREDITS: 5

PREREQUISITE(S): None

HOURS/WEEK: 5 hours/week

I. COURSE DESCRIPTION: In this introductory algebra course students will learn concepts and skills leading to applications. For those planning to enroll in programs that require technical math, this course establishes a solid foundation. This course is also well suited to those who are entering fields of study where math is not a required component of the curriculum but where a working knowledge of algebra is expected. Topics of study include polynomials, factoring, graphing, solving linear equations and systems, exponents and radicals, and quadratic equations.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Use basic algebraic concepts to solve linear equations.
2. Use factoring techniques to solve fractional linear equations.
3. Graph linear equations and inequalities using a variety of techniques.
4. Solve systems of linear equations using by graphical and and algebraic methods.
5. Solve quadratic equations using a variety of techniques.

III. TOPICS:

		Approximate Time Frame (Hours)
1.	An Arithmetic Review	2
2.	Equations	5
3.	Polynomials	9
4.	Factoring	8
5.	Algebraic Fractions	10
6.	An Introduction to Graphing	6
7.	Graphing	6
8.	Systems of Linear Equations	8
9.	Exponents and Radicals	6
10.	Quadratic Equations	6

III. LEARNING ACTIVITIES

0.0	**An Arithmetic Review**	**Pages**	**Exercises**
0.1	Prime Factorization	pp. 3 – 12	p. 13
0.2	Fractions	pp. 17 – 22	p. 22
0.3	Exponents and the order of Operations	pp. 29 – 32	p. 33
0.4	Positive and Negative Integers	pp. 35 – 40	p. 41
	Self-test for Chapter 0	pp. 49 – 50	
1.0	**The Language of Algebra**		
1.1	From Arithmetic to Algebra	pp. 53 – 58	p. 59
1.2	Properties of Signed Numbers	pp. 63 – 66	p. 67
1.3	Adding and Subtracting Signed Numbers	pp. 71 – 80	p. 81
1.4	Multiplying and Dividing Signed Numbers	pp. 89 – 96	p. 97
1.5	Evaluating Algebraic Expressions	pp. 103 – 108	p. 109
1.6	Adding and Subtracting Terms	pp. 115 – 118	p. 119
		Pages	**Exercises**
1.7	Multiplying and Dividing Terms	pp. 123 – 126	p. 127
	Self-test for Chapter 1	pp. 137 – 45	
2.0	**Equations**		
2.1	Solving Equations by the Addition Property	pp. 141 - 150	p. 151
2.2	Solving Equations by the Multiplication Property	pp. 155 - 162	p. 163
2.3	Solving equations by Combining Rules	pp. 165 - 170	p. 171
2.4	Formulas and Problem Solving	pp. 175- 184	p. 185
2.5	Applications on Linear Equations	pp. 193 - 200	p. 201
2-6	Solving Percent Applications	pp. 207 - 212	p. 213
	Self-test for Chapter 2	pp. 241 - 242	
3.0	**Polynomials**		
3.1	Exponents and Polynomials	pp. 247 - 254	p. 255
3.2	Negative Exponents and Scientific Notation	pp. 261 - 266	p 267
3.3	Adding and Subtracting Polynomials	pp. 271 - 276	p. 277
3.4	Multiplying Polynomials	pp. 281 - 286	p. 287
3.5	Special Products	pp. 293 - 296	p. 297
3.6	Dividing Polynomials	pp. 301 - 306	p. 307
	Self-test for Chapter 3	pp. 317 - 318	

4.0	**Factoring**		
4.1	An Introduction to Factoring	pp. 323 - 326	p. 327
4.2	Factoring Trinomials of the form $x^2 + bx + c$	pp. 331 - 336	p. 337
4.3	Factoring Trinomials of the form $ax^2 + bx + c$	pp. 341 - 346	p. 347
4.4	Difference of Squares and Perfect Square Trinomials	pp. 351 - 354	p. 355
4.5	Factoring by Grouping	pp. 359 - 360	p. 361
4.6	Using the ac Method to Factor	pp. 363 - 370	p. 371
4.7	Solving Quadratic Equations by Factoring	pp. 377 - 380	p. 381
	Self-test for Chapter 4	pp. 389 - 390	
5.0	**Algebraic Fractions**		
5.1	Simplifying Algebraic Fractions	pp. 395 - 400	p. 401
5.2	Adding and Subtracting Like Fractions	pp. 405 - 408	p. 409
5.3	Adding and Subtracting Unlike Fractions	pp. 411 - 418	p. 419
5.4	Multiplying and Dividing Algebraic Fractions	pp. 423 - 428	p. 429
		Pages	**Exercises**
5.5	Equations Involving Fractions	pp. 435 - 442	p. 443
5.6	Application of Algebraic Fractions	pp. 447 - 454	p. 455
	Self-test for Chapter 5	pp. 465 - 466	
6.0	**An Introduction to Graphing**		
6.1	Solutions of Equations in Two Variables	pp. 471 - 476	p. 477
6.2	The Rectangular Coordinate System	pp. 481 - 486	p. 487
6.3	Graphing Linear Equations	pp. 495 - 506	p. 507
6.4	The Slope of a Line	pp. 519 - 526	p. 527
6.5	Direct Variation	pp. 533 - 536	p. 537
	Self-test for Chapter 6	pp. 549 - 550	
7.0	**Graphing**		
7.1	The Slope Intercept Form	pp. 555 - 558	p. 559
7.2	Parallel and Perpendicular Lines	pp. 567 - 572	p. 573
7.3	The Point-Slope Form	pp. 577 - 580	p. 581
7.5	An Introduction to Functions	pp. 599 - 604	p. 605
	Self-test for Chapter 7	pp. 615 - 616	

8.0	**Systems of Linear Equations**		
8.1	Systems of Linear Equations: Solving by Graphing	pp. 621 - 626	p. 627
8.2	Systems of Linear Equations: Solving by Adding	pp. 635 - 648	p. 649
8.3	Systems of Linear Equations: Solving by Substitution	pp. 657 - 664	p. 665
	Self-test for Chapter 8	pp. 687 - 688	
9.0	**Exponents and Radicals**		
9.1	Roots and Radicals	pp. 695 - 700	p. 701
9.2	Simplifying Radical Expressions	pp. 707 – 712	p. 713
9.3	Adding and Subtracting Radicals	pp. 717 - 718	p. 719
9.4	Multiplying and Dividing Radicals	pp. 723 – 726	p. 727
	Self-test for Chapter 9	pp. 747 – 748	
10.0	**Quadratic Equations**		
10.1	More on Quadratic Equations	pp. 753 – 756	p. 757
10.3	The Quadratic Formula	pp. 767 – 772	p. 773
10.4	Graphing Quadratic Equations	pp. 777 – 784	p. 785
	Self-test for Chapter 10	pp. 797 – 798	

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

1. Beginning Algebra, 5th Edition, Streeter, Hutchison, Bergman, Hoelzle
2. Calculator: SHARP Scientific Calculator EL-531. *The use of some kinds of calculators may be restricted during tests.*

VI. EVALUATION PROCESS/GRADING SYSTEM:

MAJOR ASSIGNMENTS AND TESTS

Regular topic tests will contribute a minimum of **60%** of the overall mark.

While regular tests will normally be scheduled and announced beforehand, there may be an unannounced test on current work at any time. Such tests, at the discretion of the instructor, may be used for up to **30%** of the overall mark.

The instructor will provide you with a list of test dates and other required evaluation information for your class section. Tests may be scheduled out of regular class time.

ATTENDANCE

It is your responsibility to attend all classes during the semester. Research indicates there is a high correlation between attendance and student success.

VI. EVALUATION PROCESS/GRADING SYSTEM (continued):

If you are absent from class, it is your responsibility to find out what work was covered and assigned and to complete this work before the next class. Your absence indicates your acceptance of this responsibility.

Unexcused absence from a test may result in a mark of zero ("0"). Absence may be excused on compassionate grounds such as verified illness or bereavement. On return from an excused absence, you should ask your instructor to schedule the writing of a make-up test. Failure to do so will be considered as an unexcused absence.

METHOD OF ASSESSMENT (GRADING METHOD)

The following semester grades will be assigned to students in postsecondary courses:

Grade	Definition	Grade Point Equivalent
A+	90 - 100%	4.00
A	80 - 89%	3.75
B	70 - 79%	3.00
C	60 - 69%	2.00
F (Fail)	59% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

The method of calculating your weighted average will be defined by your instructor. Since grades are based upon averages, it follows that good marks in some tests can compensate for a failing mark in another test.

VI. EVALUATION PROCESS/GRADING SYSTEM (continued):

Make-Up Test (if applicable)
An "X" grade may be assigned at the end of the regular semester if you have met ***ALL*** of the following criteria for the course:

- an overall average between 50% and 59% was achieved
- at least 50% of the tests were passed
- at least 80% of the scheduled classes were attended
- at least 80% of quizzes and assignments were submitted
- all of the topic tests were written

If you are assigned an "X" grade, you may convert it to a "C" grade by writing a make-up test on topics agreed to by the instructor. This test will be available at the time agreed to by your instructor.

At the end of the regular term, it is your responsibility to obtain your results from your instructor and, in the event of an "X" grade, to inquire when the make-up test will be available.

The score you receive on this make-up test will replace your original test score and be used to re-calculate your weighted average. If the re-calculated average is 60% or greater, a "C" grade will be assigned. If the re-calculated average is 59% or less, an "F" grade will be assigned.

"F" and "X" Grades at the end of the Semester
If an "X" grade is not cleared by the specified date, it will become an "F" grade. Except for extenuating circumstances, an "X" grade in Math will not be carried into the next semester.

VII. SPECIAL NOTES:

Special Needs:
If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493 so that support services can be arranged for you.

Retention of course outlines:
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

VII. SPECIAL NOTES (continued):

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Rights and Responsibilities*. Students who engage in "academic dishonesty" will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course outline amendments:
The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor or the Coordinator, Mathematics Department. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

There is a MTH121 Challenge exam in place.

VIII. DIRECT CREDIT TRANSFERS:

Students who have completed an equivalent post-secondary course must bring relevant documents to the Coordinator, Mathematics Department:

- a copy of course outline
- a copy of the transcript verifying successful completion of the equivalent course

Note: A copy of the transcript must be on file in the Registrar's Office.