DEPARTMENT OF ACADEMIC UPGRADING

COURSE OUTLINE – FALL 2018

MA0122 A2: **Mathematics Grade 20-2 Equivalent 5 (6-0-0) HS**

6 hours per week (90 hours)

INSTRUCTOR:	Dr. Shohreh Rahmati	**PHONE:**	780-539-2210
OFFICE:	C417	**E-MAIL:**	SRahmati@GPRC.ab.ca

OFFICE HOURS: M, T, W, R 10-11AM

CALENDAR DESCRIPTION: Topics for this course include: inductive and deductive reasoning, spatial reasoning, properties of angles and triangles, acute triangle trigonometry, sine and cosine laws, radical expressions and equations, statistical reasoning, quadratic functions and quadratic equations, rates and proportional reasoning.

PREREQUISITE: MA0110, Mathematics 10-C, or equivalent math placement test score.

REQUIRED TEXT/RESOURCE MATERIALS:
- Foundations of Mathematics Book 11, 2011 Absolute Value Publications
- Scientific calculator, graph paper, geometry set, binder, loose leaf.

DELIVERY MODE(S): This is a lecture based course.

Lectures: M, T, W, R 16:00-17:20 PM **(J226)**

COURSE OBJECTIVES:

1. Rates and Proportional Reasoning

a. Solve problems that involve application of rates; interpret rates in a given context. Draw a graph to represent rate and explain the relationship between slope and rate.
b. Solve problems that involve scale diagrams, using proportional reasoning.
c. Demonstrate an understanding of the relationships among scale factors, areas, surface areas and volumes of similar 2-D and 3-D objects.

2. Mathematical Reasoning:

a. Analyze and prove conjectures, using inductive and deductive reasoning, to solve problems.
b. Analyze puzzles and games that involve spatial reasoning, using problem-solving strategies.

3. Reasoning with Angles and Triangles:

a. Derive proofs that involve the properties of angles and triangles.
b. Generalize the relationships between pairs of angles formed by transversals and parallel lines.

4. Trigonometry:
a. Solve problems that involve properties of angles and triangles as well as congruent triangles.
b. Solve problems that involve the cosine law and the sine law, excluding the ambiguous case.

5. Statistics:
a. Demonstrate an understanding of normal distribution, including standard deviation and z-scores. Explain, using examples, the properties of a normal curve, including the mean, median, mode, standard deviation, symmetry and area under the curve. Solve contextual problems involving interpretation of standard deviation, determine z-scores, and solve problems that involve normal distribution.
b. Interpret statistical data using confidence intervals, confidence levels and margin of error. Make inferences and support a position by analyzing statistical data.

6. Radicals:
a. Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands (limited to square roots). Simplify radicals, express radicals as mixed or entire, and rationalize monomial denominators.
b. Solve problems that involve radical equations (limited to square roots or cube roots); determine restrictions on the variable, determine and verify roots, identify and define extraneous roots.

7. Quadratic Functions:
a. Demonstrate an understanding of and determine the characteristics of quadratic functions including: vertex, intercepts, domain and range, and axis of symmetry. Sketch the graph of a quadratic function. Solve contextual problems involving the characteristics of a quadratic function.

8. Quadratic Equations:
a. Solve problems that involve quadratic equations. Determine intercepts and roots using factoring and the quadratic formula. Relate roots of a quadratic equation to zeroes of the corresponding quadratic function and x-intercepts of the graph of a function. Express a quadratic equation in factored form given the zeroes of the corresponding quadratic function or x-intercepts of the graph of the function. Solve contextual problems using a quadratic equation.

LEARNING OUTCOMES: The student should be able to demonstrate knowledge of the course objectives describe above.

TRANSFERABILITY:

This course is listed in the Alberta Transfer Guide. It is accepted at colleges and universities in Alberta as equivalent to Math 20-2.

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability

EVALUATIONS:

- 8 Assignments 16% (2% each)
- 4 Tests 28% (7% each)
- Midterm 20%
- Final Exam (cumulative) 36%

COURSE SCHEDULE/TENTATIVE TIMELINE:
This course is divided into 8 chapters. There will be a test after completion of each 2 chapters.

Test 1: Rates and Proportional Reasoning, Mathematical Reasoning

Test 2: Reasoning with Angles and Triangles, Trigonometry

Test 3: Statistics, Radicals

Test 4: Quadratic Functions, Quadratic Equations

The midterm exam will cover the first 4 chapters.

GRADING CRITERIA:

Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100		C+	2.3	67-69
A	4.0	85-89		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

STUDENT RESPONSIBILITIES: Students are required to attend classes. Assignments must be submitted on time. No late assignments will be accepted. Late or missed tests will result in mark zero unless the student provides a valid reason. No calculators, cellphones, notes or textbooks are allowed during the exams. **Cell phones are to be turned off and not used during class.**

STATEMENT ON PLAGIARISM AND CHEATING: : Refer to the Student Conduct section of the College Admission Guide at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at http://www.gprc.ab.ca/about/administration/policies/

**Note: all Academic and Administrative policies are available on the same page.