DEPARTMENT OF ACADEMIC UPGRADING

COURSE OUTLINE – FALL 2014

MA0122 5 (5-0-0) HS 75 HOURS

INSTRUCTOR: Thomas Kaip **PHONE:** 780 – 539 - 2963
OFFICE: J218 **E-MAIL:** tkaip@gprc.ab.ca

OFFICE HOURS: T/R 1:00 pm – 2:20 pm
Or by appointment

PREREQUISITE(S)/COREQUISITE:
MA0110, Mathematics 10-C, or equivalent math placement test score

REQUIRED TEXT/RESOURCE MATERIALS:

- Principles of Mathematics 11, 2011 Nelson
- Scientific calculator, graph paper, geometry set, binder, loose leaf
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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.

CREDIT/CONTACT HOURS:
5 (5-0-0) Time: 75 Hours

DELIVERY MODE:

This is a lecture based course with a lot of emphasis on students' participation and group work. First, background concepts and rules are reviewed; additional notes and examples are provided as necessary. Several related problems are assigned daily to reinforce new ideas and skills. Students are expected to spend approximately one hour on homework daily.

OBJECTIVES:

1. **Inductive and Deductive 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.

2. **Properties of 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.

3. **Acute Triangle 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.

4. **Radicals and Radical Equations:**
   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.

5. **Statistical Reasoning:**
   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. **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.

7. **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.

8. **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.

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**

GRADING CRITERIA:

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	**4-point Equivalent**	**Percentage Guidelines**	**Designation**
A^{+}	**4.0**	**90 – 100**	**EXCELLENT**
A	**4.0**	**85 – 89**	
A^{-}	**3.7**	**80 – 84**	**FIRST CLASS STANDING**
B^{+}	**3.3**	**77 – 79**	
B	**3.0**	**73 – 76**	**GOOD**
B^{-}	**2.7**	**70 – 72**	
C^{+}	**2.3**	**67 – 69**	**SATISFACTORY**
C	**2.0**	**63 – 66**	
C^{-}	**1.7**	**60 – 62**	
D^{+}	**1.3**	**55 – 59**	**MINIMAL PASS**
D	**1.0**	**50 – 54**	
F	**0.0**	**0 – 49**	**FAIL**
WF	**0.0**	**0**	**FAIL, withdrawal after the deadline**

EVALUATIONS:

Although 50% is considered a pass for this course, if you wish to be successful at the next level, we strongly recommend that you achieve a mark of 65% or better.

Chapter Assignments (8 at 3.5% each)	28%
Section Tests (3 at 7% each)	21%
Midterm Exam	16%
Final Exam: Cumulative	35%

STUDENT RESPONSIBILITIES:
MA0132 is a prerequisite for many post-secondary programs. In taking this course, the primary goal is that students will develop their understanding of and ability to use mathematics. However, students in this course are also learning how to prepare for the demands and expectations of post-secondary education. Please read and ensure you understand the following expectations before we begin:

Assignments must be submitted on time.
Assignments are due **at the beginning of class** on the specified dates.

Exams must be written on the days announced in class.
If an emergency prevents attendance on an exam day, students must contact me **immediately** via phone or email, and may be asked to provide documentation to justify their absence. Students will then be scheduled to write *an alternate version* of the exam at the first available opportunity.

Classes will start on time.
Students are asked to remain in class for the duration of the class. Late students may be required to wait to enter to avoid disturbing the class in progress.

Complete Daily Homework.
Students should expect to complete at least **1 hour of study per day** outside of class time.

Please stow your phones
Cell phone use is a distraction to you, your classmates, and the instructor. Cellphone calculators will not be permitted during exams.

Take responsibility for your learning.
The instructor will monitor and periodically update students with their progress, but it is ultimately the students' responsibility to direct and manage their own learning.

Participation
Students will be asked for feedback, to answer and to ask questions in class.

STATEMENT ON PLAGIARISM AND CHEATING:
Please refer to pages 49-50 of the College calendar regarding plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.

