



DEPARTMENT OF ACADEMIC UPGRADING

COURSE OUTLINE – WINTER 2016

MA0122 (VC): Mathematics Grade 20-2 Equivalent – 5 (5-0-0) 75 Hours

INSTRUCTOR: Sukhvir Sandhu **PHONE:** (780) 539-2810 or 2234

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OFFICE HOURS: TBA

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(S)/COREQUISITE:

MA0110 or equivalent math placement test score

Notes: You may register in MA0122 if you achieved a mark of 60 percent or better in Alberta Education Math 10-C, or equivalent, within the previous two years.

REQUIRED TEXT/RESOURCE MATERIALS:

Text Book: Foundations of Mathematics Book 11, 2011 Absolute Value Publications
Scientific calculator, graph paper, geometry set, binder, loose leaf

DELIVERY MODE:

- MA 0122 is a modularized math course divided into 8 separate topics. The topic is further divided into five or six Lessons. Each Lesson provides a brief instructions,

followed by an example(s). Hints are provided to solve the example(s). However, the examples are not done in details, and thus the answers to the examples are not found in the book. However, the answers will be provided regularly as you go through the topics. The examples will be followed by the **Assignment** which contains the questions similar to the examples. The answers to all the Assignment questions are listed under the title **Answer Key** before starting the next Lesson. Do every single question to make sure you understand the newly introduced concepts. The key to success in working with a one-to-one delivery method is to ask questions whenever you have difficulty understanding the instructions, the examples, or the exercises. **Do not hesitate to ask for help.**

- There will be five assignments, three tests, one midterm, and a final exam in this course
- You must submit an **assignment** for marks for certain topic. Failing to hand in the assignment on the required date will result in a mark reduction for that particular assignment. Feedback on the assignment will be given as soon as possible, but must not take more than 24 hours.
- **The recommended test date or assignment date for topic(s) is on the course outline on page 6.** Follow these dates as closely as you can. You must revise and review the material thoroughly before taking Module test(s) / exam. You are encouraged to write a test early if you are prepared. When writing an assignment or a test, be sure to show all of your work on the test paper. Marks are given for the method as well as the final answer. Even though 50% is a passing mark, a mark of at least 60% in any test/assignment is recommended.
- **Only one test re-write of your choice is allowed. It will replace the corresponding mark, and must be taken during the last week of classes.**
- Upon completion of the first four topics, a midterm test will be written on or before **Monday, February 29**. If you miss this date, you will receive a mark of 0% on your midterm. Upon completion of all eight topics, you will write a three hour final exam. Be sure to leave time to prepare for this important exam! It is worth a large percentage of your final grade.
- **Consult your instructor immediately if you find yourself falling behind schedule.** Your instructor may ask you to spend more time in the Math Lab and get help often. **All tests / rewrite must be written by Monday, April 11.**

COURSE OBJECTIVES:

This course introduces students to:

- Problems involving application of rates, interpret rates in a given context
- Representation of rates by drawing graphs and the relationship between slope and rate
- Relationship among scale factors, areas, surface areas, and volumes of 2-D and 3-D objects
- Properties of angles and triangles as well as congruent triangles
- The cosine law and the sine law, excluding ambiguous case
- An understanding of normal distribution, including standard deviation and z-scores
- Concept of normal curve, including the mean, median, mode, standard deviation, symmetry, and area under the curve
- Interpretation of statistical data during confidence interval, confidence levels, and margin of errors
- Operations on radicals, and radical expression with numerical and variable radicands
- Concept of radical as mixed or entire, and rationalize monomial denominators
- Characteristics of quadratic functions including: vertex, intercepts, domain, range, and axis of symmetry
- Graphing of a quadratic functions
- Problems involving the characteristics of a quadratic functions
- Problems that involve quadratic equations, factoring, and quadratic formula
- Roots of a quadratic equations and the relationship of roots of a quadratic equations to the zeroes of the corresponding quadratic function and x-intercepts of the graph of a function
- Proof of conjectures, using inductive and deductive reasoning, to solve problems
- Analysis of puzzles and games that involve spatial reasoning, using problem-solving strategies
- Derivation of proofs that involve the properties of angles and triangles
- Generalize the relationship between pairs of angles formed by transversals and parallel lines

COURSE OUTCOME:

As a result of taking this course, students will gain the ability to:

- 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
- Solve problems that involve scale diagrams, using proportional reasoning
- Solve problems involving area, surface area, and volume of complex 2-D and 3-D objects

- Solve problems that involve properties of angles and triangles as well as congruent triangles
- Solve problems that involve the cosine law and the sine law, excluding the ambiguous case
- Solve contextual problems involving the interpretation of standard deviation, z-scores, and normal distribution
- Make inferences and support a position by analyzing statistical data
- Solve problems that involve operations on radical and radical expressions with numerical and variable radicands (limited to square roots)
- Simplify radicals, express radicals as mixed and entire, and rationalize monomial denominators
- Solve problems that involve radical equations (limited to square roots or cube roots)
- Determine restrictions on variable, determine and verify roots, identify and define extraneous roots
- Determine the characteristics of quadratic functions including: vertex, intercepts, domain, range, and axis of symmetry
- Sketch the graph of a quadratic function
- Solve contextual problems involving the characteristics of a quadratic function
- Solve problems that involve quadratic equations
- Determine intercepts and roots using factoring and the quadratic formula
- Express a quadratic equation in factored form given the zeros of the corresponding quadratic function or x-intercepts of the graph of a function
- Solve contextual problems using a quadratic equation
- Prove conjectures, using inductive and deductive reasoning, to solve problems
- Analyze puzzles and games that involve spatial reasoning, using problem-solving strategies
- Derive proofs that involve the properties of angles and triangles
- Generalize the relationships between pairs of angles formed by transversals and parallel lines

TRANSFERABILITY: N/A

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

Winter 2016

MA0122 Topics/Tests or Assignment

1. Measurement

- **Assignment**
- Recommended time to finish the topic and assignment is 7 days
- Recommended date and day for the assignment to be handed in for marks is Friday, Jan 15.

2. Trigonometry

- Recommended time to finish the topic is 6 days.
- **Test 1** which would include topic 1 and 2.
- Recommended date and day for **the test 1 is Wednesday, Jan 27.**

3. Statistics

- **Assignment**
- Recommended time to finish the topic and assignment is 7 days
- Recommended date and day for the assignment to be handed in for marks is Monday, February 8.

4. Radicals

- Recommended time to finish the topic is 6 days.
- **Test 2** which would include topic 3 and 4.
- Recommended date and day for **the test 2 is Thursday, February 25.**

Midterm must be written on Monday, February 29

5. Quadratic Functions

- **Assignment**
- Recommended time to finish the topic and assignment is 7 days
- Recommended date and day for the assignment to be handed in for marks is Wednesday, March 9.

6. Quadratic Equations

- Recommended time to finish the topic is 7 days.
- **Test 3** which would include topic 5 and 6.
- Recommended date and day for **the test 3 is Wednesday, March 23.**

7. Mathematical Reasoning

- **Assignment**
- Recommended time to finish the topic and assignment is 7days
- Recommended date and day for the assignment to be handed in for marks is Thursday, April 1.

8. Reasoning with Angles and Triangles

- **Assignment**
- Recommended time to finish the topic and assignment is 5days
- Recommended date and day for the assignment to be handed in for marks is Monday, April 11.

Final Exam: (April 15- 26)

EVALUATION CRITERIA:

Your final mark is determined by:

5 Assignments	15 %
3 Tests	27 %
Midterm	20 %
Final Exam	38 %

STUDENT RESPONSIBILITIES:

In addition to the *Student Rights and Responsibilities* as set out in the college website, the following guidelines will maintain an effective learning environment for everyone:

1. Regular attendance is expected of all students in all mathematics courses. Your success in math is directly linked to your attendance. Attendance will be taken daily.
2. Students are expected to be punctual. Arrive on time for classes and remain for the duration of scheduled classes.
3. Refrain from disruptive talking or socializing during class time.
4. Be respectful of others regarding food or beverages in the classroom. Clean up your eating area and dispose of garbage.
5. Recycle paper, bottles, and cans in the appropriate containers.
6. Children are not permitted in the classrooms.
7. Students are expected to notify the instructor of any extenuating circumstances.

ELECTRONIC DEVICES:

Students are expected to turn off cell phones during class time or in labs. No unspecified electronic devices will be allowed in exams.

STATEMENT ON PLAGIARISM AND CHEATING

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, 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 www.gprc.ab.ca/about/administration/policies/**

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

STUDENT PRINTING POLICY:

Please refer to the College website (Home > Tuition and Fees) for the printing policy which limits the free use of paper; extra charges will be applied if the limit is exceeded.