



**DEPARTMENT OF ACADEMIC UPGRADING**

COURSE OUTLINE – WINTER 2014

**MA0132: MATHEMATICS GRADE 12 EQUIVALENT (PRINCIPLES 30-2)**

**INSTRUCTOR:** Joelle Reynolds                      **PHONE:** 780-539-2204  
**OFFICE:** C305                                              **EMAIL:** jreynolds@gprc.ab.ca  
**OFFICE HOURS:** Mondays 1:00 pm – 2:00 pm, Thursdays 10:00 am – 11:20 am

**PREREQUISITE(S)/COREQUISITE:**

MA0122 or MA0120 or equivalent, or equivalent math placement test score, or Math 20-1 or 60% or higher in Math 20-2 or equivalent within the previous two years

**REQUIRED TEXT/RESOURCE MATERIALS:**

- Principles of Mathematics 12 Nelson Education Ltd.
- Non-graphing scientific calculator (Texas Instruments TI-30XIIS preferred, but not essential)
- Graph paper (a blue post-it note graph pad is ideal, sold in the GPRC Bookstore)
- **NOTE: There is approximately 750 pages (single sided) or 400 pages (double sided) worth of printing recommended for this course**

**CALENDAR DESCRIPTION:**

This course explores set theory, counting methods, probability, rational expressions and equations, as well as polynomial, exponential, logarithmic and sinusoidal functions.

**CREDIT/CONTACT HOURS:**

5 (6-0-0)            90 contact 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; then students are guided through the workbook, and 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:

### **Unit 1 Set Theory**

---

- Sort numbers using set notation and Venn diagrams.
- Determine the number of elements in a set.
- Determine the relationships between sets.
- Represent the intersection and union of two sets.
- Apply set theory to solve problems.

### **Unit 2 Counting Methods**

---

- Apply the fundamental counting principle to determine the number of different ways to perform multi-step operations.
- Use factorial notation to determine permutations and combinations, or to solve for  $n$  or  $r$ .
- Determine the number of permutations of  $n$  different objects when all, or part, are used at a time.
- Determine the number of permutations of  $n$  objects when some of them are identical.
- Define combinations of  $n$  objects.
- Determine the number of different combinations when  $r$  objects are selected from  $n$  different objects.
- Apply the principle of combinations to different situations, and solve related problems.

### **Unit 3 Probability**

---

- Distinguish between experimental and theoretical probability.
- Interpret odds and relate them to probability.
- Solve probability questions that involve permutations and combinations.
- Solve problems that involve mutually exclusive and non-mutually exclusive events.
- Solve problems that involve dependent and independent events.

### **Unit 4 Rational Expressions and Equations**

---

- Determine equivalent rational expressions.
- Determine non-permissible values.
- Perform operations with rational expressions: add, subtract, multiply and divide .
- Simplify rational expressions that require factoring of binomials.
- Solve rational equations.

## **Unit 5 Polynomial Functions**

---

- Identify characteristics of graphs of polynomial functions.
- Determine characteristics of graphs from the leading coefficient and constant term.
- Determine the best fit line for a set of data, and use the function to solve a problem.
- Determine the curve of best fit for a set of data and use the function to solve problems.

## **Unit 6 Exponential Functions**

---

- Use the equation of an exponential function to predict the characteristics of its graph and identify the graph.
- Solve exponential equations by using common bases and graphically.
- Solve problems modelled with exponential functions.
- Represent data using an exponential function and interpret the graph to solve problems.
- Solve loan, mortgage and depreciation problems using exponential functions.

## **Unit 7 Logarithmic Functions**

---

- Determine the characteristics of logarithmic functions from an equation.
- Estimate and determine the values of logarithmic expressions.
- Understand and apply the laws of logarithms.
- Use logarithms to solve exponential equations.
- Model situations using logarithmic functions and interpret the models.

## **Unit 8 Sinusoidal Functions**

---

- Sketch angles in degree and radian measure.
- Estimate the radian measure of an angle given the degree measure.
- Describe the characteristics of sinusoidal functions using their graphs and equations.
- Graph data for and model a situation using a sinusoidal function.
- Solve problems using sinusoidal function models.

### **TRANSFERABILITY:**

This course is listed in the Alberta Transfer Guide. It is accepted at colleges and universities in Alberta as equivalent to Math 30-2.

**\*\* Grades 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:**

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

**EVALUATION:**

Assignments (4 at 5% each)	20%
Assignments will be collected at the end of units 1,3,5 and 7.	
Section Tests (4 at 7% each)	28%
Tests will cover two units of material at a time and will be conducted after units 2,4,6 and 8. Of the two units on a test, the second unit will be weighed more heavily than the first.	
Midterm Exam	12%
The midterm will cover material from units 1 through 4.	
Final Exam: Cumulative	40%
Cumulative (covers material from units 1 through 8).	

## **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:

### **Regular attendance and participation is required.**

Attendance is a strong indicator of student success. Attendance will be taken daily and may influence discretionary decisions made by the instructor. Students will be required to answer questions in class.

### **Assignments must be submitted on time.**

Assignments are due **at the beginning of class** on the specified dates. There are only 4 assignments in this course. Manage your time appropriately to ensure they are completed on time.

### **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 who are approved to write at an alternate time will then be scheduled to write *an alternate version* of the exam at the first available opportunity. No unspecified electronics will be permitted during exams.

### **Complete Daily Homework**

At least **1 hour of study per day** outside of class time. Unless you are told otherwise, questions similar to those in the workbook may appear on assignments and tests even if they were not presented in class.

### **Be respectful of the learning environment**

Please be conscious of how your behaviors affect the learning of others. Please refrain from any behaviors that might disturb the people around you, including socializing, cell phone use, littering and tardiness. The instructor will take measures as required to protect the learning environment for all students.

**Take responsibility for your learning**

Your instructor will monitor and periodically update you with your progress, but it is ultimately **the student's responsibility** to direct and manage their own learning. It is your job to recognize when you require additional support and to seek those supports out.

**Communicate with your instructors.**

You can communicate with your instructors via:

- One to one appointments (discussion regarding your progress or office hours help).
- Moodle (additional practice and study materials, assignments, marks and remote office hours link).
- Email – (notifications, schedule changes, assignment adjustments).

*Students are expected to check Moodle as well as GPRC email on a regular basis*

If there are major influences that may interfere with your learning, inform your instructor well in advance, so that arrangements can be made to work around them if possible. If you are concerned with your progress in the course, please make an appointment with you instructor to discuss strategies for success.

**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 according to college policy.

This schedule is tentative, and may change at any point in the course at the discretion of the instructor.

## MA0132 Winter 2014 Schedule

January 14																																																								
<table style="font-size: small; margin-left: auto;"> <tr> <th colspan="5">January 14</th> <th colspan="5">February 14</th> </tr> <tr> <td>Su</td><td>Mo</td><td>Tu</td><td>We</td><td>Th</td> <td>Fr</td><td>Sa</td><td>Su</td><td>Mo</td><td>Tu</td> <td>We</td><td>Th</td><td>Fr</td><td>Sa</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> <td>6</td><td>7</td><td>8</td><td>9</td><td>10</td> <td>11</td><td>12</td><td>13</td><td>14</td> </tr> <tr> <td>15</td><td>16</td><td>17</td><td>18</td><td>19</td> <td>20</td><td>21</td><td>22</td><td>23</td><td>24</td> <td>25</td><td>26</td><td>27</td><td>28</td> </tr> </table>					January 14					February 14					Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
January 14					February 14																																																			
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa																																											
1	2	3	4	5	6	7	8	9	10	11	12	13	14																																											
15	16	17	18	19	20	21	22	23	24	25	26	27	28																																											
Monday	Tuesday	Wednesday	Thursday	Friday																																																				
<b>Dec-30</b>	<b>31</b>	<b>Jan-1-14</b>	<b>2</b>	<b>3</b>																																																				
<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>																																																				
	Course Orientation GS 1	1.1 1.2	1.3	1.4																																																				
<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>																																																				
	Assign 1 Due GS 2	2.1	2.2	2.3																																																				
<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>																																																				
	2.4	2.5 2.6	2.7	Review																																																				
<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>																																																				
	Test 1	GS 3	3.1 3.2	3.3																																																				

## MA0132 Winter 2014 Schedule

February 14																																																								
<table style="font-size: small; margin-left: auto;"> <tr> <th colspan="5">February 14</th> <th colspan="5">March 14</th> </tr> <tr> <td>Su</td><td>Mo</td><td>Tu</td><td>We</td><td>Th</td> <td>Fr</td><td>Sa</td><td>Su</td><td>Mo</td><td>Tu</td> <td>We</td><td>Th</td><td>Fr</td><td>Sa</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> <td>6</td><td>7</td><td>8</td><td>9</td><td>10</td> <td>11</td><td>12</td><td>13</td><td>14</td> </tr> <tr> <td>15</td><td>16</td><td>17</td><td>18</td><td>19</td> <td>20</td><td>21</td><td>22</td><td>23</td><td>24</td> <td>25</td><td>26</td><td>27</td><td>28</td> </tr> </table>					February 14					March 14					Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
February 14					March 14																																																			
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa																																											
1	2	3	4	5	6	7	8	9	10	11	12	13	14																																											
15	16	17	18	19	20	21	22	23	24	25	26	27	28																																											
Monday	Tuesday	Wednesday	Thursday	Friday																																																				
<b>Feb-3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>																																																				
	3.4	3.5	3.6	Assign 2 Due GS 4																																																				
<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>																																																				
	4.1	4.2	4.3	4.4																																																				
<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>																																																				
Family Day	Winter Break																																																							
<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>																																																				
	4.5	Review	Test	Review																																																				

This schedule is TENTATIVE and may change at the discretion of the instructor.

## MA0132 Winter 2014 Schedule

March 14																																																																																															
<table style="display: inline-table; margin-right: 20px;"> <tr><td>Su</td><td>Mo</td><td>Tu</td><td>We</td><td>Th</td><td>Fr</td><td>Sa</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <table style="display: inline-table;"> <tr><td>Su</td><td>Mo</td><td>Tu</td><td>We</td><td>Th</td><td>Fr</td><td>Sa</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr> <tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr> <tr><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td></tr> </table>					Su	Mo	Tu	We	Th	Fr	Sa								3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							Su	Mo	Tu	We	Th	Fr	Sa								6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Su	Mo	Tu	We	Th	Fr	Sa																																																																																									
3	4	5	6	7	8	9																																																																																									
10	11	12	13	14	15	16																																																																																									
17	18	19	20	21	22	23																																																																																									
24	25	26	27	28	29	30																																																																																									
31																																																																																															
Su	Mo	Tu	We	Th	Fr	Sa																																																																																									
6	7	8	9	10	11	12																																																																																									
13	14	15	16	17	18	19																																																																																									
20	21	22	23	24	25	26																																																																																									
27	28	29	30	31																																																																																											
	Monday	Tuesday	Wednesday	Thursday	Friday																																																																																										
3 - 6/3	<b>Mar-3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>																																																																																										
		Midterm	GS 5	5.1 5.2	5.3 5.4																																																																																										
10 - 13/3	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>																																																																																										
		Assign 5 Due GS 6	6.1 6.2	6.3	6.4																																																																																										
17 - 20/3	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>																																																																																										
		6.5	Assign 6 Due Review	Test	GS 7																																																																																										
24 - 27/3	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>																																																																																										
		7.2	7.1	7.3	7.4																																																																																										
31/3 - 3/4	<b>31</b>	<b>Apr-1</b>	<b>2</b>	<b>3</b>	<b>4</b>																																																																																										

## MA0132 Winter 2014 Schedule

April 14																																																																																																						
<table style="display: inline-table; margin-right: 20px;"> <tr><td>Su</td><td>Mo</td><td>Tu</td><td>We</td><td>Th</td><td>Fr</td><td>Sa</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td></tr> <tr><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td></tr> <tr><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td></tr> <tr><td>29</td><td>30</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> </table> <table style="display: inline-table;"> <tr><td>Su</td><td>Mo</td><td>Tu</td><td>We</td><td>Th</td><td>Fr</td><td>Sa</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table>					Su	Mo	Tu	We	Th	Fr	Sa								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	Su	Mo	Tu	We	Th	Fr	Sa								4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8
Su	Mo	Tu	We	Th	Fr	Sa																																																																																																
1	2	3	4	5	6	7																																																																																																
8	9	10	11	12	13	14																																																																																																
15	16	17	18	19	20	21																																																																																																
22	23	24	25	26	27	28																																																																																																
29	30	1	2	3	4	5																																																																																																
Su	Mo	Tu	We	Th	Fr	Sa																																																																																																
4	5	6	7	8	9	10																																																																																																
11	12	13	14	15	16	17																																																																																																
18	19	20	21	22	23	24																																																																																																
25	26	27	28	29	30	1																																																																																																
2	3	4	5	6	7	8																																																																																																
	Monday	Tuesday	Wednesday	Thursday	Friday																																																																																																	
31/3 - 3/4	<b>Mar-31</b>	<b>Apr-1</b>	<b>2</b>	<b>3</b>	<b>4</b>																																																																																																	
		7.5	Assign 7 Due GS 8	8.1	8.2 8.3																																																																																																	
7 - 10/4	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>																																																																																																	
		8.4	8.5	Review	Test																																																																																																	
14 - 17/4	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>																																																																																																	
			Exams		Good Friday																																																																																																	
21 - 24/4	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>																																																																																																	
	* From Apr-19		Exams																																																																																																			
28/4 - 1/5	<b>28</b>	<b>29</b>	<b>30</b>	<b>May-1</b>	<b>2</b>																																																																																																	
	* Exams																																																																																																					

This schedule is TENTATIVE and may change at the discretion of the instructor.