



DEPARTMENT OF ACADEMIC UPGRADING

COURSE OUTLINE – FALL 2013

MA0132 – 5(6-0-0) HS 90 HOURS

INSTRUCTOR: Joelle Reynolds **PHONE:** 780-539-2204
OFFICE: C305 **EMAIL:** jreynolds@gprc.ab.ca
M/R 1:00 pm – 2:20 pm, W/F 10:00 am – 11:20 am
OFFICE HOURS: or by appointment in office/online

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:

MA 0132 – Mathematics Grade 12 Equivalent (Principles 30-2)

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.

Complete an assignment at the end of this unit worth 3.5% of the total grade.

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.

Complete an assignment at the end of this unit worth 3.5% of the final grade.

Complete a test at the end of this unit worth 7% of the final grade.

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.

Complete an assignment worth 3.5% of final grade.

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.

Complete an assignment at the end of this unit worth 3.5% of the final grade.

Complete a midterm exam worth 16% of the total grade.

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.

Complete an assignment at the end of this unit worth 3.5% of the final grade.

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.

Complete an assignment at the end of this unit worth 3.5% of the final grade.

Complete a test at the end of this unit worth 7% of the final grade.

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.

Complete an assignment at the end of this unit worth 3.5% of the final grade.

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.

Complete an assignment at the end of this unit worth 3.5% of the final grade.

Complete a test at the end of this unit worth 7% of the final grade.

Write a Cumulative Final Exam worth 35% of the final grade.

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:

| 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) |

EVALUATION:

| | |
|--------------------------------------|-----|
| 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.

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

MA0132 TIMELINE

| Unit | TOPIC/DESCRIPTION | Approximate Timeline | Your Mark |
|------|--|-------------------------|--------------|
| 1 | Set Theory Sections 1.1 – 1.4 | 5 days | |
| 2 | Counting Methods Sections 2.1 – 2.7 | 7 days | |
| | Review for Section 1 Test | 1 day | |
| | Section Test | 1 day | |
| 3 | Probability Sections 3.1 – 3.6 | 6 days | |
| 4 | Rational Expressions and Equations Sections 4.1 – 4.5 | 5 days | |
| | Review for Midterm | 2 days | |
| | MIDTERM EXAM | 1 day | |
| 5 | Polynomial Functions Sections 5.1 – 5.4 | 4 days | |
| 6 | Exponential Functions Sections 6.1 – 6.5 | 5 days | |
| | Review for Section 3 Test | 1 day | |
| | Section Test | 1 day | |
| 7 | Logarithmic Functions Sections 7.1 – 7.5 | 5 days | |
| 8 | Sinusoidal Functions Sections 8.1 – 8.5 | 5 days | |
| | Review for Section 4 Test | 1 day | |
| | Section Test | 1 day | |
| | Review for Final Exam | 1 day | |
| | Final Exam | TBA | |

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

September 13

| | | | | | | | | | | | | | |
|--------------|----------|----------|----------|----------|----------|----------|------------|----------|----------|----------|----------|----------|----------|
| September 13 | | | | | | | October 13 | | | | | | |
| Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa |
| 10/26/09 | 10/27/09 | 10/28/09 | 10/29/09 | 10/30/09 | 10/31/09 | 11/01/09 | 10/26/09 | 10/27/09 | 10/28/09 | 10/29/09 | 10/30/09 | 10/31/09 | 11/01/09 |

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|-------------|-----------|---------|---------------------------|--------------------|---------------------------|
| | Sep-2 | 3 | 4 | 5 | 6 |
| 2 - 5/9 | | | | First Day of Class | 1.1 |
| 9 - 12/9 | 9 1.2 | 10 | 11 1.3 | 12 1.4 | 13 2.1 Assign 1 Due |
| 16 - 19/9 | 16 2.2 | 17 | 18 2.3 | 19 2.4 | 20 2.5 |
| 23 - 26/9 | 23 2.6 | 24 | 25 2.7 Assign 2 Due | 26 Review | 27 Test 1 |
| 30/9 - 3/10 | 30 3.1 | Oct-1 | 2 | 3 | 4 |

October 13

| | | | | | | | | | | | | | |
|------------|----------|----------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|----------|----------|
| October 13 | | | | | | | November 13 | | | | | | |
| Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa |
| 10/18/09 | 10/19/09 | 10/20/09 | 10/21/09 | 10/22/09 | 10/23/09 | 10/24/09 | 10/18/09 | 10/19/09 | 10/20/09 | 10/21/09 | 10/22/09 | 10/23/09 | 10/24/09 |

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|-------------|----------------------------------|---------|--------------|---------------------------|-----------|
| | Sep-30 | Oct-1 | 2 | 3 | 4 |
| 30/9 - 3/10 | | | 3.2 | 3.3 | 3.4 |
| 7 - 10/10 | 7 3.5 | 8 | 9 3.6 | 10 4.1 Assign 3 Due | 11 4.2 |
| 14 - 17/10 | 14 No Classes Thanksgiving | 15 | 16 4.3 | 17 4.4 | 18 4.5 |
| 21 - 24/10 | 21 Assign 4 Due Review | 22 | 23 Review | 24 Midterm | 25 5.1 |
| 28 - 31/10 | 28 5.2 | 29 | 30 5.3 | 31 5.4 | Nov-1 |

November 13

| November 13 | | | | | | | December 13 | | | | | | |
|-------------|-------|-------|-------|------|------|------|-------------|-------|-------|-------|-------|-------|------|
| Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa |
| | | | | | | | | | | | | | |
| 10/28 | 10/29 | 10/30 | 10/31 | 11/1 | 11/2 | 11/3 | 11/25 | 11/26 | 11/27 | 11/28 | 11/29 | 11/30 | 12/1 |

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|------------|-------------------------------------|-----------|---------------------------|--------------|---------------------|
| | Oct-28 | 29 | 30 | 31 | Nov-1 |
| 28 - 31/10 | | | | | 6.1 Assign 5 Due |
| 4 - 7/11 | 4 6.2 | 5 | 6 6.3 | 7 6.4 | 8 Fall Break |
| 11 - 14/11 | 11 No Classes Remembrance Day | 12 | 13 6.5 Assign 6 Due | 14 Review | 15 Test |
| 18 - 21/11 | 18 7.1 | 19 | 20 7.2 | 21 7.3 | 22 7.4 |
| 25 - 28/11 | 25 7.5 | 26 | 27 8.1 | 28 8.2 | 29 8.3 |

December 13

| December 13 | | | | | | | January 14 | | | | | | |
|-------------|-------|-------|-------|-------|-------|------|------------|------|------|------|------|------|------|
| Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa |
| | | | | | | | | | | | | | |
| 11/25 | 11/26 | 11/27 | 11/28 | 11/29 | 11/30 | 12/1 | 12/2 | 12/3 | 12/4 | 12/5 | 12/6 | 12/7 | 12/8 |

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|-------------|--------------|----------|-------------------|-------------------|--------------------|
| | Dec-2 | 3 | 4 | 5 | 6 |
| 2 - 5/12 | 8.4 | | 8.5 | Review | Test |
| 9 - 12/12 | 9 Review | 10 | 11 | 12 Final Exams | 13 To Dec-20-13 |
| 16 - 19/12 | 16 | 17 | 18 Final Exams | 19 | 20 |
| 23 - 26/12 | 23 | 24 | 25 | 26 | 27 |
| 30/12 - 2/1 | 30 | 31 | Jan-1-14 | 2 | 3 |