



**School of Arts & Science  
MATHEMATICS DEPARTMENT**

**MATH 115-002  
Pre-Calculus  
2007 Fall**

## COURSE OUTLINE

The Approved Course Description is available on the web @ \_\_\_\_\_

Ω Please note: this outline will be electronically stored for five (5) years only.  
It is strongly recommended students keep this outline for your records.

### 1. Instructor Information

(a)	Instructor:	Rich Tschritter		
(b)	Office Hours:	Mon-Friday 11:00-12:00, Tues&Thurs 2:00-4:00, 5:00-5:50 pm		
(c)	Location:	Ewing-268		
(d)	Phone:	370-3494	Alternative Phone:	475-0659(home)
(e)	Email:	Tschritter@camosun.bc.ca		
(f)	Website:	Tschritter.disted.camosun.bc.ca		

### 2. Intended Learning Outcomes

(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)

Upon completion of this course the student will be able to:

1. Evaluate functions, find the domain of functions, compose and decompose functions and find inverse functions.
2. Graph polynomial and rational functions using symmetry, intercepts, long run behaviour, asymptotes and a table of signs.
3. Prove the Remainder and Factor Theorems and use the theorems to factor polynomials and find their real and complex zeros.
4. Graph exponential and logarithmic functions and their transformations.
5. Prove the properties of logarithms and use these properties to simplify expressions, and solve equations and applied problems.
6. Graph the six trigonometric functions and their transformations and the three basic inverse trigonometric functions.
7. Use the unit circle definitions to derive the Pythagorean identities, the sum and difference formulas, and the double angle and half angle formulas. Use these identities to simplify expressions, solve equations and verify other identities.
8. Use trigonometric functions to model real-life problems involving cyclical patterns.
9. Evaluate limits, find derivatives using the definition, find equations of tangent lines and solve optimization problems using polynomial calculus.
10. Read and write mathematics at a level sufficient for entry into first year calculus.

### 3. Required Materials

(a)	Texts	Precalculus seventh edition- Larson & Hostetler
(b)	Other	

### 4. Course Content and Schedule

(Can include: class hours, lab hours, out of class requirements and/or dates for quizzes, exams, lectures, labs, seminars, practicums, etc.)

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#### COURSE OUTLINE FOR MATH 115 Fall /07

Instructor: Rich Tschritter, Ewing 268

Text: Precalculus, Seventh Edition, by Larson & Hostetler

Calculator: Scientific- Sharp EL-531W

#### CHAPTER A: APPENDIX A Review

#	Text	Time
1	A.3-4	2 Rational Expressions
2	A.5	1 Solving Equations
3	A.6	1 Solving Inequalities

#### CHAPTER 1: FUNCTIONS AND THEIR GRAPHS

#	Text	Time
4	1.3	3 Functions, Linear Functions in Two Variables
		<b>TAKE-HOME TEST # 1</b>
5	1.4	1 Functions
6	1.5,1.6	1 Analyzing Graphs of Functions, Parent Functions
	1.7	1 Transformations of Functions
7	10.2,2.1	1 Parabolas, <b>ignore focus and directrix</b>
8	10.3	1 Ellipse, <b>ignore foci and eccentricity</b>
9	10.4	1 Hyperbola, <b>ignore foci and eccentricity</b>
10	1.8	1 Combinations of Functions, Composite Functions
11	1.9	1 Inverse Functions

1 TEST 1, Lessons 1 to 10

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16 hours

#### CHAPTER 2: POLYNOMIAL AND RATIONAL FUNCTIONS

#	Text	Time
12	2.2	1 Polynomial Functions of Higher Degree
13	2.3	1 Polynomial and Synthetic Division
14	2.5	2 Zeros of Polynomial Functions
15	2.6	2 Rational Functions

#### **TAKE-HOME TEST #2**

#### CHAPTER 3: EXPONENTIAL AND LOGARITHMIC FUNCTIONS

#	Text	Time
16	3.1	1 Exponential Functions and Their Graphs
17	3.2	2 Logarithmic Functions and Their Graphs
18	3.3	1 Properties of Logarithms
19	3.4	1 Exponential and Logarithmic Equations

20 3.5 3 Exponential and Logarithmic Models  
1 TEST 2, Lessons 12 to 20

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15 hours

#### CHAPTER 4: TRIGONOMETRY

#	Text	Time
21	4.1	1 Radian and Degree Measure
22	4.3	1 Right Triangle Trigonometry
23	4.2+4.4	2 Trigonometric Functions: The Unit Circle
24	4.5	1 Graphs of Sine and Cosine Functions
25	4.6	1 Graphs of Other Trigonometric Functions
26	4.7	1 Inverse Trigonometric Functions

#### Take-Home-Test #3

#### CHAPTER 5: ANALYTIC TRIGONOMETRY

#	Text	Time
27	5.1	2 Using Fundamental Identities
28	5.2	1 Verifying Trigonometric Identities

1 Test 3, Lessons 21 to 28  
11 hours

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29	5.3	2 Solving Trigonometric Equations
30	5.4	2 Sum and Difference Formulas
31	5.5	2 Double and Half Angle Formulas

#### TAKE-HOME TEST #4

1 TEST 4, Lessons 27 to 31  
7 hours

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18 hours

#### CALCULUS

#	Text	Time
32		1 Limits
33		1 The Secant line; Average Velocity
34		1 The Tangent line
35		1 The Derivative Function
36		1.5 Differentiation Rules for Polynomials; Instantaneous Velocity
37		1.5 Graphing Polynomial Functions
38		1 Max/Min Problems

1 TEST 5, Lessons 32 to 38

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10 hours

Review: 3 hours

Final exam, Lessons 1 to 38

## FIRST DAY HANDOUT FOR Rich Tschritter's MATH 115 STUDENTS

Welcome to my class. I hope that the term goes well for you. Please take some time to read the following. I think you will find it helpful and informative.

### A. SOME GENERAL COMMENTS

1. HOW IMPORTANT IS REGULAR ATTENDANCE? It is essential that you attend every class. If for some reason you miss a class, you will need to act quickly to get caught up. Get a copy of the notes from one of your classmates. Work through the notes very carefully.
2. HOW MUCH TIME SHOULD I BE SPENDING ON MATH EVERY WEEK? If up to date, a typical student will need to spend a minimum of 60 minutes per day. It is highly preferable that this be done before the next class.
3. TEXTBOOK. We have just moved to the seventh edition of PreCalculus by Larson & Hostetler. However, you may use without trouble the sixth edition. When I assign homework from the seventh edition, I will tell you how to find the same questions in the sixth.

Also, do not purchase the little calculus booklet **unless you wish to** as we will not be using it in this class.

4. CALCULATORS. Graphing and programmable calculators **may not be used** on any test or on the final exam. The approved scientific calculator is the Sharp EL-531 which may be purchased at the book store.

### B. HOW TO GET HELP

1. For the first two weeks of the course, I intend to spend up to 20 minutes each day going over homework problems and any other questions you may have. After that period, we will not be able to afford that much time, but I will fit in as many of your questions as I can.
2. Please come to my office (E-268) for help. You may make an appointment, or just drop in. My official office hours are from 11:00-12:00 M to W, 2:00-4:00 & 5:00-5:50 pm Tu & Th
3. I strongly urge you to find one or more people in this class who you can study with. For many people, learning mathematics in a social setting with their peers can be very rewarding and productive.
4. Free tutoring is available in The Mathlab, Ewing 224 & Ewing 342. The lab is open ?(see schedule posted on door) and sometimes over the weekend.

### C. EVALUATION PROCEDURES FOR THE COURSE

1. TERM MARK. You will be doing a number of take-home tests. These can be done in consultation with other students in your class, but with the help of nobody else. They will be overdue if not handed in at the beginning of the class on the due date, but can be handed in up to one day late with only a 10% mark deduction on your score.

The term mark is the average of the scores on your in-class tests.

However, if your take-home test scores are satisfactory (overall average is at least 60%), you will be allowed to throw out your worst test before the average is calculated, provided **that you have handed in all HW assignments on time and have written all class Tests!.And the class Test average is at least 50%!**

If you miss an in-class test for ANY reason, you must contact me (e-mail) as soon as possible to make other arrangements will get a zero. There will be no make-ups.

2. FINAL EXAM. The final exam for this course is to be written by all students on the day and time scheduled. The examinations for this term will be held in December 2007. Please make sure you are available during this period.
3. MARK FOR THE COURSE. Your course mark is the larger of:
  - a) The average of your term mark and your final exam mark (each is worth 50%)
  - b) Your final exam mark

Provided that the above requirements are satisfied! That is: all HW assignments are handed in on time

(average is at least 60%) and all class tests have been written (at least 50% average)

4. LETTER GRADE. Your course mark is then translated to a letter grade using the following table:

A+ 90%	B+ 77%	C+ 65%	F 0-49%
A 85%	B 73%	C 60%	
A- 80%	B- 70%	D 50%	

#### **D. USING THIS COURSE AS A PREREQUISITE**

You will need a recent B in this course in order to proceed to Math 100.

You should be advised that the success rate for students in Math 100 who have not received at least a B in Math 115 or Math 12 is very low.

You will also need a recent B in order to proceed to Math 110.

A Recent C in Math 115 is sufficient for entry to Math 108, but you can expect with this sort of mark to have to work very hard.

#### **E ONE MORE THING**

In order to make the class lecture more useful it is absolutely essential that you do all HW from the Text and ask questions in class as well.

## **F. Intended Learning Outcomes**

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)*

Upon completion of this course the student will be able to:

1. Evaluate functions, find the domain of functions, compose and decompose functions and find inverse functions.
2. Graph polynomial and rational functions using symmetry, intercepts, long run behaviour, asymptotes and a table of signs.
3. Prove the Remainder and Factor Theorems and use the theorems to factor polynomials and find their real and complex zeros.
4. Graph exponential and logarithmic functions and their transformations.
5. Prove the properties of logarithms and use these properties to simplify expressions, and solve equations and applied problems.
6. Graph the six trigonometric functions and their transformations and the three basic inverse trigonometric functions.
7. Use the unit circle definitions to derive the Pythagorean identities, the sum and difference formulas, and the double angle and half angle formulas. Use these identities to simplify expressions, solve equations and verify other identities.
8. Use trigonometric functions to model real-life problems involving cyclical patterns.
9. Evaluate limits, find derivatives using the definition, find equations of tangent lines and solve optimization problems using polynomial calculus.
10. Read and write mathematics at a level sufficient for entry into first year calculus.

G. Note: There are **no, repeat no formula sheets given out** for any of the class Tests or the Final Exam. You should make a point to memorize these as we go along in the course.

## **Math 115 Study Guide, Rich Tschritter's Class**

*By studying the following core material, you will be preparing yourself for at least 90 percent of the questions on any term test or the final exam. Moreover, any non-core questions will be similar to ones done in class and/or the homework.*

**Test 1: Algebra Prerequisites; Functions & their Graphs (35-40 marks)**

1. Add rational functions or simplify a complex fraction (2 - 5 marks).
2. Solve an equation with fractional expressions (2 - 5 marks).
3. Solve an inequality. You will need to use real number line to test intervals. The question will involve either a polynomial function or a rational function - a ratio of two polynomials (2 - 4 marks).
4. Be able to recognize whether a certain graph is that of a function or not (0-1 mark).
5. Sketch a piecewise-defined function (2-3 marks).
6. Be able to evaluate a difference quotient similar to  $\frac{f(x+h) - f(x)}{h}$  or  $\frac{f(x_2) - f(x_1)}{x_2 - x_1}$  for a given function (2 - 4 marks).
7. Test for symmetry: odd, even or neither (2 - 4 marks). Be sure to do it algebraically, by comparing  $f(-x)$  to  $f(x)$  and be able to interpret the graphical meaning.
8. Transformations:
  - a) Be familiar with the graphs of the core functions  $x^2$ ,  $x^3$ ,  $x^4$ ,  $\sqrt{x}$ ,  $|x|$ ,  $\frac{1}{x}$ , and of the unit circle  $x^2 + y^2 = 1$  and the two unit hyperbolas  $x^2 - y^2 = 1$  and  $y^2 - x^2 = 1$ .
  - b) Graph a variation of the above using transformations. This may involve completing the square. Do only one transformation at a time, each on a separate graph with proper labeling and the reason given. (2 - 5 marks).
  - c) Be familiar with the equation and graph of an circle, ellipse, parabola or hyperbola. (3-7 marks)
9. Given the component functions  $f(x)$  and  $g(x)$ , calculate and simplify  $f \circ g(x)$ , or decompose an expression of the form  $f \circ g(x)$ , into its component functions (2 - 3 marks).
10. Find the inverse of a function, using algebra (2 - 4 marks).

**Test 2: Polynomial, Rational, Exponential and Logarithmic Functions (35 - 40 marks)**

1. Find the vertex (by completing the square) and intercepts of a quadratic function (parabola) and graph (2 - 5 marks).
2. Sketch a polynomial function, taking into account the maximum number of direction changes, applying the leading coefficient test for how the graph enters and leaves the page, testing for symmetry, and finding the intercepts (2 - 5 marks).
3. Use synthetic division to find the quotient and remainder when a polynomial is divided by  $x - r$  (2 marks).
4. Use the Remainder Theorem to find the remainder when a polynomial is divided by an expression of the form  $x - r$  (1 or 2 marks).
5. List all possible rational zeros of a certain polynomial (1 mark). *If asked this question, do not check to see if any actually work or not.*
6. Solve a polynomial equation of degree 3 or 4, as we did in class (2 - 5 marks). Real zeros only.
7. Sketch a rational function, as we did in class. Indicate domain, intercepts, vertical and horizontal asymptotes (3 - 7 marks).
8. Using the method mentioned in test 1, item 8, graph transformations of the core functions:  $\log_b x$ ,  $b^x$  (3 -5 marks).

10. Combine a sum or difference of expressions involving logarithms into a single expression, and vice-versa (1 or marks).
11. Solve a logarithmic equation (2 - 4 marks).
12. Solve an exponential equation using logarithms (2 - 4 marks).
13. Calculate a logarithm with a base other than 10 or e, without using a formula (2 marks).
14. Applications (1 or 2 questions chosen from the following, 2 - 7 marks total). *You will need to know the formulas as well.*
  - Population growth:  $P = P_0 e^{kt}$
  - Compound interest:
    - Regular:  $A = P\left(1 + \frac{r}{n}\right)^{nt}$
    - Continuous:  $A = Pe^{rt}$
  - Richter scale:  $R = \log\left(\frac{I}{I_0}\right)$
  - Radioactive decay:  $P = P_0 e^{kt}$ ,  $k < 0$
15. Theory: prove one of the following (2 marks):
  - $\log_b xy = \log_b x + \log_b y$
  - $\log_b x^n = n \log_b x$
  - $\log_b \frac{x}{y} = \log_b x - \log_b y$



### Test 3: Trigonometry part 1 (35 - 40marks)

Watch out for  $\sin^{-1} x$ . It means  $\arcsin x$ . It does not mean the reciprocal of  $\sin x$ ,  $\csc x$ . Also, memorize:

- the sines/cosines/tangents of  $\frac{\pi}{6}, \frac{\pi}{3}, \frac{\pi}{4}$
  - the graphs of  $\sin x$ ,  $\cos x$ ,  $\tan x$ ,  $\sec x$ ,  $\csc x$ ,  $\cot x$ ,  $\arcsin x$ ,  $\arccos x$ ,  $\arctan x$
  - that  $-\frac{\pi}{2} \leq \arcsin x \leq \frac{\pi}{2}$ ,  $0 \leq \arccos x \leq \pi$ ,  $-\frac{\pi}{2} < \arctan x < \frac{\pi}{2}$
  - the formulas mentioned in the theory section below.
1. A simple question involving the relationship  $s = r\theta$ . Recall  $\theta$  must be in radian mode (1- 2 marks).
  2. Convert from degrees to radians, or vice-versa (1 - 2 marks).
  3. A question(s) like: "Find  $\cot(\frac{11\pi}{6})$  exactly using reference angles (no calculator)" (2 - 4 marks).
  4. Simplify an expression like  $\sin(x - \pi)$  using the unit circle, or using transformations; know both methods (1 - 2 marks).
  5. Using the method mentioned in Test 1, item 8, graph transformations of the six trig functions and arcsine, arccosine & arctangent. *Always graph at least two periods worth.* Give amplitude (for sine and cosine only), period and phase shift (for the six trig functions) (2 to 4 marks).
  6. A question like: "Suppose  $\tan \theta = \frac{-3}{8}$ ,  $\theta$  in II. Find  $\cos \theta$  using the x-y-r method" (2 - 4 marks).
  7. Evaluate an expression like  $\tan(\arcsin(-\frac{3}{8}))$ . Do it without using a calculator (2 or 3 marks).
  8. A question like: "Suppose  $\tan \theta = -0.2308$ ,  $\theta$  in II. Find  $\cos \theta$  using identities" (2 marks).
  9. Simplify an expression where you will have to use a combination of algebraic techniques and trigonometric identities (2 - 4 marks).
  10. Express a trig expression in terms of a single trig function (2 marks).
  11. Prove an identity by simplifying each side independently (2 or 3 marks).
  12. Theory, taken from the following list (maximum of 3 marks total):
    - Derive  $\sin^2 x + \cos^2 x = 1$
    - Derive  $1 + \tan^2 x = \sec^2 x$  or  $1 + \cot^2 x = \csc^2 x$  using the above identity
    - "Derive" the odd/even formulas  $\sin(-x) = -\sin(x)$  and  $\cos(-x) = \cos(x)$  using either the unit circle or the function graphs. *Although this does not constitute a formal proof, it will suffice for this course.*
    - Derive the odd/even formulas for the other four trig functions using the above formulas.
    - "Derive" the co-function formulas  $\sin(\frac{\pi}{2} - x) = \cos x$  and  $\cos(\frac{\pi}{2} - x) = \sin x$  using graphs. *Although this does not constitute a formal proof, it will suffice for this course.*

#### Test 4: Trigonometry part 2 (35 - 40 marks)

- This test may also have questions from Test 3.
- *Be sure to have memorized the formulas mentioned in the theory section below.*

1. Solve a trigonometric equation. You may be asked to give all answers, or to restrict your answers to  $[0, 2\pi)$  (2 or 3 questions, 6 to 10 marks total).
2. Prove a trigonometric identity, by simplifying each side independently (1 or 2 questions, 2- 4 marks each).
3. Use an identity to simplify an expression like  $\cos(x + \pi)$  (2 - 4 marks).
4. Evaluate an expression like  $\tan 75^\circ$  or  $\cos(22\frac{1}{2}^\circ)$  without using a calculator (2 - 4 marks).
5. A question like: "find  $\tan(2\theta)$  if  $\cos\theta = -\frac{3}{7}$  and  $\theta$  is in the third quadrant" or "find  $\sec(\alpha - \beta)$  if  $\alpha$  is in the second quadrant &  $\sin\alpha = \frac{1}{3}$  and  $\beta$  is in the third quadrant &  $\tan\beta = 4$ ." Do it without using a calculator (2 - 5 marks).
6. Evaluate an expression like  $\cos\left[\arcsin\left(-\frac{3}{8}\right) + \arctan\left(\frac{3}{2}\right)\right]$ . Do it without using a calculator (2 - 4 marks).

7. Evaluate an question like: given  $\tan\theta = 3, \frac{3\pi}{2} < \theta < 2\pi$ ,

find the exact value of  $\sin\left(\frac{\theta}{2}\right)$ , 3-5 marks

8. Theory, taken from the following, (3 - 5 marks total):

- The sum formulas:
  - Derive the formula for  $\cos(x + y)$  from the formula for  $\cos(x - y)$ . *You will not be asked to derive the formula for  $\cos(x - y)$ .*
  - Derive the formula for  $\sin(x + y)$  using the co-function identities, the fact that sine is odd and cosine is even, and the formula for  $\cos(x - y)$ . This is a little tricky and I don't give this question as often as I give some of the others.
  - Derive the formula for  $\sin(x - y)$  using the formula for  $\sin(x + y)$ .
  - Derive the formulas for  $\tan(x \pm y)$  using similar methods.
- Derive the double angle formulas for sine, cosine and tangent using the corresponding formulas for the sum of two angles. In the case of  $\cos(2x)$ , then use  $\sin^2 x + \cos^2 x = 1$  to get the two variations.
- Derive the half angle formulas for sine and cosine using the formulas

$$\sin^2 x = \frac{1 - \cos 2x}{2}, \quad \cos^2 x = \frac{1 + \cos 2x}{2} \quad (\text{which you will not have to prove}).$$

## Test 5 (35 - 40 marks)

Always calculate derivatives using the rules, unless specifically asked otherwise (as in #1 below).

1. Calculate the limit of an algebraic expression.  
(2-5 marks)
2. Calculate a derivative from first principles ie. using the (limit) definition (5-7 marks total).
3. Calculate a derivative using the formulas (2 - 5 marks). The equation will be a polynomial function.
4. Find the equation of the tangent line at any given point on the curve or a variation of this. (2 -4 marks).
5. An application involving velocity, both average and instantaneous (2 -6 marks).
6. An application involving max-min of revenue, cost height, or similar type problem.(3-4 marks)
7. Graph a polynomial function using calculus (4 -7 marks). Be sure to:
  - Find all critical values locate all points where the derivative is zero
  - Locate all points where the derivative is zero
  - Use the real number line and test intervals to determine where the function is increasing or decreasing
  - Locate where the graph enters and leaves the page by examining the value of the function for large negative and positive x's using the leading coefficient test for polynomials.
8. Max-min applied problems (one of the following three types (3 -5 marks):
  - A variation of the fence problem
  - A variation of the open box problem
  - A variation of the cylindrical can problem

## **Final Exam** (3 hours long)

- The core of the final exam will be a subset of the core of the five term tests with approximately the same number of questions from each area.
- Be sure to have memorized all that you were asked to memorize for Test 3 and Test 4 with the following exceptions which if required will be given to you:
  - The addition and subtraction formulas for tangent
  - The reduction formulas for sine and cosine
  - The half angle formulas for sine, cosine and tangent
- There will be one or two questions devoted to theory, total value at most 5%. Questions will be chosen from the Theory sections above, with the exception of the following questions which will not be tested:
  - Derivation of the co-function formulas  $\sin(\frac{\pi}{2} - x) = \cos x$  and  $\cos(\frac{\pi}{2} - x) = \sin x$
  - Derivation of the reduction and half angle formulas for sine and cosine

**Math 115 Homework Assignments, Rich Tschritter's Class**  
**Using the Sixth and Seventh Editions of Precalculus, Larson & Hostetler**

Lesson			Assignment
	7'th 6'th	A.1	1-45 odd, 87,95, 1-45 odd, 93, 95
	7'th 6'th	A.2	33-45 odd, 55,73,79,81,97 37-49 odd, 73,87,89,91
	7'th 6'th	A.3	63,83,87,95,109,127,135,141,151,155,185-199 odd 59,71,75,87,97,113,121,125,133,157-167 odd
1	7'th 6'th	A.4	Day 1: 5, 7, 21, 25, 37, 41, 45, 47, Day 2: 55, 57, 59 Day 1: 5, 7, 21, 25, 37, 41, 45, 47. Day 2: 61, 63, 67
2	7'th 6'th	A.5	29, 31, 37, 43, 57, 65, 73, 93, 155 Same
3	7'th 6'th	A.6 & 2.7 A.6	A.6: 37, 39; 2.7: 11, 13, 23, 37, 41, 45, 49, 59 A.6: 37, 39, 93, 95, 105, 113, 117, 121, 125, 131
4	7'th 6'th	1.3 1.2	7,11,19,25,39,49,53,65,69,71,75 7,11,19,25,31,37,39,55,69,87,89,93
5	7'th 6'th	1.4 1.3	1, 7, 13, 25, 33, 43, 61, 67, 79, 81, 85 1, 7, 13, 23, 31, 41, 59, 65, 77, 79, 83
6	7'th 6'th	1.5 1.4	1, 5, 7, 9, 11, 13, 31, 33, 71, 73, 75 1, 5, 7, 9, 11, 13, 31, 33, 61, 63, 65
7	7'th 6'th	1.7 1.6	1, 9, 13, 17, 21, 29, 33, 37, 45, 51, 55, 59 + questions on completing the square 1, 9, 13, 17, 21, 25, 29, 33, 41, 47, 51, 55 + questions on completing the square
8	7'th 6'th	1.8 1.7	31, 33, 35, 39, 41, 45, 47, 51, 63 35, 37, 39, 43, 45, 49, 51, 55, 59
9	7'th 6'th	1.9 1.8	1 odd 15, 19, 27, 29, 69, 83a&c (1 odd 15 means 1, 3, 5, 7, ..., 15) Same
10	7'th 6'th	2.1	1-8, 17, 23, 27, 37, 77 1-8, 17, 23, 27, 37, 84
11	7'th 6'th	2.2	1-8, 13 odd 19, 67, 77 Same
12	7'th 6'th	2.3	5, 7, 19, 27, 49, 57abcd Same
	7'th	2.5	55, 61, 63, 67, 69

13	6 <sup>th</sup>		Same
14	7 <sup>th</sup> 6 <sup>th</sup>	2.6	5, 7, 9, 11, 13, 14, 15, 16, 31, 39 5, 7, 9, 11, 13, 14, 15, 16, 25, 39
15	7 <sup>th</sup> 6 <sup>th</sup>	3.1	7-10, 17, 19 7-10, 11, 13
16	7 <sup>th</sup> 6 <sup>th</sup>	3.2	1, 5, 9, 13, 17, 19, 21, 31, 35, 39-44, 53, 61, 71 1, 5, 9, 13, 19, 21, 25, 39, 43, 33-38, 15, 29, 49
17	7 <sup>th</sup> 6 <sup>th</sup>	3.3	23, 37, 43, 45, 53, 55, 61, 65, 69, 73, 75, then on day 2 do 9 odd 15 59, 73, 21, 23, 31, 33, 39, 43, 47, 51, 53, then on day 2 do 9 odd 15
18	7 <sup>th</sup> 6 <sup>th</sup>	3.4	9, 11, 13, 15, 19, 21, 35, 37, 41, 47, 49, 51, 57, 75, 81, 91, 97 7, 13, 17, 19, 23, 27, 37, 39, 43, 49, 51, 53, 59, 77, 85, 93, 99
19	7 <sup>th</sup> 6 <sup>th</sup>	3.5	15, 17, 25, 27, 35c, 39, 42 (answer to #42 is 15,683 years) 15, 17, 25, 27, x, 39, 42 x means the question is not in this edition
20	7 <sup>th</sup> 6 <sup>th</sup>	4.1	1 fours 69, 79 odd 89 1 fours 69 means 1, 5, 9, 13, etc to 69 1, 5, 9, 13, 17, 21, 49, 53, 57, 61, 65, 69, 27, 39, 31, 35, 43, 47, 79 odd 89
21	7 <sup>th</sup> 6 <sup>th</sup>	4.3	9, 13, 27, 29, 31 9, 13, 17, 19, 21
22	7 <sup>th</sup> 6 <sup>th</sup>	4.2 & 4.4	4.2: 1 fours 25, 43, 45, 53, 55 + 4.4: 3, 7, 11, 15, 17, 27, 45 odd 55, 65, 73 4.2: Same +4.4: 3, 7, 11, 15, 17, 27, 45 odd 55, 59, 65
23	7 <sup>th</sup> 6 <sup>th</sup>	4.5	1 fours 33, 41, 45, 49, 53, 73, 77 1 fours 33, 37, 41, 45, 49, 69, 71
24	7 <sup>th</sup> 6 <sup>th</sup>	4.6	7, 9, 11, 13, 19, 23 Same
25	7 <sup>th</sup> 6 <sup>th</sup>	4.7	1 fours 57, 79, 91, 97
26	7 <sup>th</sup> 6 <sup>th</sup>	5.1	1, 5, 9, 13, 15-26, 27 fours 67, 91 Same
27	7 <sup>th</sup> 6 <sup>th</sup>	5.2	1, 5, 7, 11, 15, 19, 23, 27, 31, 35, can do 1-37 odd for more practise 1, 5, 9, 13, 17, 21, 25, 29, 33, 37, same
28	7 <sup>th</sup> 6 <sup>th</sup>	5.3	1, 5, 9, 13, 17, 21, 25, 29, 35, 39, 41, can do 1-43 odd for more practise 1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 39, can do 1-39 odd " " "
29	7 <sup>th</sup> 6 <sup>th</sup>	5.4	1 fours 33, 35, 41, 43, 45, 47, 51, 53, 59 Same
30	7 <sup>th</sup> 6 <sup>th</sup>	5.5	3, 5, 9, 15, 19, 23, 25, 35, 41, 45, 49, 51, 95, 99, 117 Same
31	7 <sup>th</sup> 6 <sup>th</sup>	10.2	1-27 odd same
32	7 <sup>th</sup> 6 <sup>th</sup>	10.3	1-27 odd, 35, 41-47 odd, 53 1-27 odd, 33, 35, 37, 39, 45, 47
33	7 <sup>th</sup> 6 <sup>th</sup>	10.4	1-19 odd, 23, 31, 33, 35, 37 1-19 odd, 23, 31, 33, 35, 37

Lessons 34 – 40: see handout for Calculus unit. You may wish to purchase the Calculus booklet at the bookstore if you wish.

### **Note the following important dates:**

Sept 18 Fee deadline, Tuesday

Oct 8 Holiday, Thanksgiving Day, Monday

Oct 9 Last day for students who have extended health and/or dental benefits to opt out of Students Benefit Plan

Nov 6 Last day to withdraw without a failing grade  
Last day to change to audit

Nov 12 Monday, Remembrance Day

**Dec 10 to 15, 17 and 18, Exams      Students must be available to write their final exams during this time period!      No exceptions!**

**5. Basis of Student Assessment (Weighting)**

*(Should be linked directly to learning outcomes.)*

(a)	Assignments	15%
(b)	Quizzes	35%
(c)	Exams	50%
(d)	Other (eg, Attendance, Project, Group Work)	

**6. Grading System**

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)*

**Standard Grading System (GPA)**

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

**Temporary Grades**

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy E-1.5 at [camosun.ca](http://camosun.ca) for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.

<b>IP</b>	<i>In progress:</i> A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. (For these courses a final grade will be assigned to either the 3 <sup>rd</sup> course attempt or at the point of course completion.)
<b>CW</b>	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

**7. Recommended Materials or Services to Assist Students to Succeed Throughout the Course**

**LEARNING SUPPORT AND SERVICES FOR STUDENTS**

There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, at Student Services or the College web site at [camosun.ca](http://camosun.ca).

**STUDENT CONDUCT POLICY**

There is a Student Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, at Student Services and on the College web site in the Policy Section.

**ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED**