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| CAMOSUN COLLEGE Math 115 - Pre-Calculus Course Description for Summer 2005 |
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COURSE HOURS: 12:00 –2:20 p.m. Mon-Thur. in Young 227
 Part I July 6-28 (Exam July 28); Instructor: Cathy Frost
 Part II Aug. 2-24 (Exam Aug. 25 or 26); Instructor: Gemma Cuizon
Both parts must be completed for credit in Math 115. Your final grade will be the average of Parts I and II.

TEXT: Larson, Hostetler, *Precalculus*, 6th edition, Houghton-Mifflin, 2004
 Math. Dept., *Introduction to Differential Calculus*

INSTRUCTOR: Cathy Frost Office: Ewing 250
 E-mail: frost@camosun.bc.ca Phone #: 370-3404
Website: <http://frost.disted.camosun.bc.ca> (Course notes!!)
 Office Hours: 11:00-12:00 Mon. – Thur. or by appointment

OUTLINE FOR PART I

| | <i>UNIT</i> | <i>SECTIONS (in text)</i> | <i>HOURS</i> | <i>TOTAL</i> |
|----|---|--|---------------------------|------------------------|
| 1. | Review, Graphing Algebra Review, Conics | A.1 → A.8*, Conics Handout, Review Assignment TEST Appendices/Conics | 6 1 | 7 |
| 2. | Functions Graphing, Linear Equations Functions, Graphing Techniques Polynomial Functions Rational Functions | 1.1, 1.2, 1.3 → 1.6 2.1, 2.2, 2.3, 2.5 2.6, Review Assignment TEST Unit 1 & 2 | 1 4 5 2 1 | 13 |
| 3. | Exponents and Logarithms Algebra of Functions Exponential and Logarithmic Functions Exponential and Logarithmic Equations Applications | 1.7, 1.8 3.1, 3.2 3.3, 3.4 3.5 Assignment | 2 4 3 1 | 10 |
| | Review & Final Exam | | <u>4</u> | <u>4</u> |
| | | TOTAL | <u>34</u> | <u>34</u> |

*Sections A.1→A.8 in 6th ed correspond to sections P.1→P.8 in the 5th ed

Notes:

1. Assignments are due two school days before the test or exam. If you hand in your assignment on time, get at least 75%, and do better on the test, I will count your test mark for both the test and assignment. Assignments will not be accepted after the test is written.
2. No graphing/programmable or electronic devices other than a scientific calculator are allowed on the tests or exam.
3. **Need extra help?** I encourage you to take advantage of our math tutor in the math lab (Ewing 342). You can also see me during office hours.
4. The final exam counts for 50%. If your term mark is at least 50% and you do better on the exam than your term, your exam can count for 100%.
5. All tests must be written and there are no rewrites. If you are ill on a test day, e-mail me about your absence to make other arrangements. Otherwise a zero will be recorded.
6. Pre-requisite for 115 →B+ in Math 063/073; for Math 105 (same credit, 7.5h/wk)→C in 063/073; for Math 100 → B (75%); Math 108/109→C (60%)
 Please see an Academic Advisor (Dawson bldg) and talk with me if you do not have the necessary pre-requisites.

Tentative Pacing Schedule for Math 115- Part I

Text: Larson, Hostetler, Precalculus, 6th edition, Houghton-Mifflin, 2004

| Wk | | Monday | Tuesday | Wednesday | Thursday |
|----|------|--|---------------------------------------|--|---------------------------------|
| 1 | July | 4 A.1/A.2/A.3 | 5 A.4/A.5/A.6 | 6 A.6/A.7/A.8 | 7 1.1/Conics |
| 2 | | 11 Conics/1.2/1.3 Assignment #1 | 12 1.3/1.4/1.5 | 13 Test #1 1/6/2.1 <i>fee deadline</i> | 14 2.2/2.3 omit 2.4 |
| 3 | | 18 2.5/2.6 | 19 1.7/1.8 Assignment #2 | 20 3.1/3.2 Review | 21 Test #2 3.2/3.3 |
| 4 | | 25 3.3/3.4 | 26 3.5 Assignment #3 | 27 Review | 28 Exam |

EVALUATION: Assignments (10%) Unit Tests (40%) Final Exam (50% or 100%*)
* 100% option if term mark is 50% or higher.

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|---------------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Percentage: | 0-49 | 50-59 | 60-64 | 65-69 | 70-74 | 75-79 | 80-84 | 85-89 | 90-94 | 95-100 |
| Letter Grade: | F | D | C | C+ | B- | B | B+ | A- | A | A+ |

Important Dates

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| July 13 | Last day to withdraw to avoid full fees. |
| July 28 | Exam- Part I |
| Aug. 5 | Last day to withdraw to avoid an "F" on your transcript |
| Aug. 25/26 | Exam- Part II |

Study Guide & Suggested Exercises for Math 115

This list of exercises and examples from the text and the Calculus booklet combined with the problems worked on in class and on assignments and tests make up at least 90% of the problems that you can expect to be tested on.

Suggested Odd Exercises: Unless indicated, the **odd questions** are recommended as you will find the answers in the back of the text. Exercises in **Bold** print are quite challenging, or require a graphing utility, so are not typical of the problems on a test.

| Pre-Calculus, Larson, Hostetler, 6 th ed. | Suggested (Mostly) Odd Exercises | Examples to Study |
|--|--|-------------------|
| A.1 Real Numbers - Properties | • #19 → 39, 93, 99 | Ex. 1 → 5 |
| A.2 Exponents and Radicals | • #37 → 43, 49, 61, 65, 69, 73, 87, 91, 105 | Ex. 1 → 15 |
| A.3 Polynomials and Factoring | • # 59, 71, 75, 87, 97, 113, 121, 125, 133, 137, 155 → 167, 173, 175 | Ex. 1 → 14 |
| A.4 Rational Expressions | • # 13, 17, 21, 25, 29, 33, 37, 41, 47, 51 → 57, 65 → 69, 73, 75, 81 | Ex. 1 → 11 |
| A.5 Solving Equations | • # 31, 38, 61, 65, 79, 87, 101, 115, 123, 125, 131, 137, 141, 145, 151, 159, 163, 169, 173, 177, 191, 197 | Ex. 1 → 11 |
| A.6 Solving Inequalities | • # 1 → 15, 31, 41, 83, 85, 87, 93, 97, 101, 105, 107, 113 → 133 | |
| A.7 Errors and the Algebra of Calculus | • # 9, 15, 21, 23 → 35, 39 → 53, 57 | Ex. 1 → 6 |
| A.8 Graphical Representation of Data | • # 31, 35, 43, 49, 51 | Ex. 3 → 6 |
| 1.1 Graphs of Equations | • # 1 → 4, 9, 11, 17, 19, 21 → 27, 35, 55, 59, 63, 65, 69, 73, Conics Handout | Ex. 1 → 7 |
| 1.2 Linear Equations in Two Variables | • # 37, 41, 57, 59, 71, 77, 83, 87, 93, 101 | Ex. 1 → 7 |
| 1.3 Functions | • # 13 → 35, 41, 45, 49, 51, 53, 59, 63, 67, 77 → 91, 95 | Ex. 1 → 9 |
| 1.4 Analyzing Graphs of Functions | • # 1 → 37, 41, 51, 53, 55 , 61 → 71, 78 | Ex. 1 → 6 |
| 1.5 Library of Functions | • # 3, 7, 11, 19, 23, 27, 43 → 49, 53 → 61 | Ex. 1 → 3 |
| 1.6 Shifts, Reflections and Stretches | • # 1, 3, 9 → 33, 39 → 43, 47- 53, 57, 61abd, 65 | Ex. 1 → 5 |
| 2.1 Quadratic Functions | • # 1 → 17, 21, 23, 27, 29, 35, 39, 43, 47, 51, 55, 61, 65, 73 → 87 | Ex. 1 → 5 |
| 2.2 Polynomial Functions | • # 1 → 9, 23 , 35, 39, 53, 55, 61, 65, 67, 75, 79, 89, 91 | Ex. 1 → 7 |
| 2.3 Polynomial and Synthetic Division | • # 2, 9, 11, 23, 27 → 31, 37, 39, 43, 47 → 53, 59, 61, 67 , 73 | Ex. 1 → 6 |
| 2.5 Zeros of Polynomial Functions | • # 1, 3, 7 → 27, 35 , 59*, 65*, 91 (*find all real zeros) | Ex. 1 → 8, 10 |
| 2.6 Rational Functions | • # 1 → 39, 59 , 63 → 73, 77 | Ex. 1 → 7 |
| 1.7 Combinations of Functions | • # 3, 13, 21, 37 → 55, 59, 61, 65 [corrections: #39 $x \in \mathbb{R}, x \geq -4$; #45 $x \neq -3$] | Ex. 1 → 7 |

| Pre-Calculus, Larson, Hostetler, 6 th ed. | Suggested (Mostly) Odd Exercises | Examples to Study |
|--|--|---------------------|
| 1.8 Inverse Functions | • # 1 → 11, 15, 17, 21 → 33, 41 → 49, 61, 65, 67, 69, 75, 77 | Ex. 1 → 7 |
| 3.1 Exponential Functions and Graphs | • # 5 → 21, 25, 29, 33, 41, 45, 49, 53, 55, 61, 65, 67, 71 | Ex. 1 → 8 |
| 3.2 Logarithmic Functions and Graphs | • # 1 → 35, 39-43, 47, 49, 59, 61 → 67 | Ex. 1 → 10 |
| 3.3 Properties of Logarithms | • # 1 → 13, 17 → 53, 57 → 79, 81, 85 | Ex. 1 → 6 |
| 3.4 Exponential and Log Equations | • # 11 → 63, 71, 75 , 79 → 103, 105 , 111 → 117 | Ex. 1 → 11 |
| 3.5 Exponential and Log Models | • # 1 → 13, 27, 29, 35, 37, 41, 47, 50 | Ex. 1 → 6 |
| END OF PART I | | |
| 4.1 Radian and Degree Measure | • # 1 → 57, 71, 75, 79, 81, 83 | Ex. 1 → 5 |
| 4.2 Trig Functions: The Unit Circle | • # 1 → 59 | Ex. 1 → 4 |
| 4.3 Right Triangle Trigonometry | • # 3, 7, 11, 13, 17, 19, 21, 37, 39, 41, 45 → 59, 61, 66 | Ex. 1 → 9 |
| 4.4 Trig Functions of Any Angle | • # 1 → 57, 65, 69 → 89, 95, 96, 99 | Ex. 1 → 7 |
| 4.5 Graphs of Sine & Cosine Functions | • # 1 → 41, 47, 51, 57 → 71, 75 | Ex. 1 → 6 |
| 4.6 Graphs of Other Trig Functions | • # 1 → 9, 29, 33, 37, 39, 63, 73, 75 | Ex. 1, 2, 6 |
| 4.7 Inverse Trigonometric Functions | • # 1 → 67, 69 , 71, 75, 79, 91, 96, 97 | Ex. 1 → 7 |
| 5.1 Using Fundamental Identities | • # 1 → 19, 25, 31, 37, 39, 45, 49, 53, 55, 57, 61 → 69, 73, 79, 95 | Ex. 1 → 7, 8 |
| 5.2 Verifying Trigonometric Identities | • # 1 → 39 (at least 15 of them), 43, 47, 49, 53, 55, 61 | Ex. 1 → 7 |
| 5.3 Solving Trigonometric Equations | • # 3, 7 → 31, 33, 39, 43, 45, 55 , 59, 69, 71, 73 | Ex. 1 → 9 |
| 5.4 Sum and Difference Formulas | • # 3 → 7, 11, 19, 23, 29, 33, 37 → 49, 53 → 63, 69, 73 , 77, 79, 81 | Ex. 1 → 8 |
| 5.5 Double and Half-Angle Formulas | • # 1 → 27, 35, 41, 45, 49, 51, 59 , 95 → 101, 107, 109, 111 | Ex. 1 → 4, 6, 7 |

| Introduction to Differential Calculus (Math Dep't booklet) | Suggested Exercises (All) | Examples to Study |
|--|---------------------------|-------------------|
| 1.3 Limits | • #1 → 4 | Ex. 1 → 4 |
| 1.2 Secant and Tangent Lines | • #1, 2 | Ex. 1, 2 |
| 1.4.1 Definition of the Derivative | • # 1 → 3 | Ex. 1, 2 |
| 1.4.2 Rules for Calculating Derivatives | • # 1, 2 | Ex. 1 → 4 |
| 1.5.1 Rates of Change | • #1 → 6 | Ex. 1, 2 |
| 1.5.2 Tangent Lines | • #1 → 7 | Ex. 1, 2 |
| 1.5.3 Graphing Polynomials | • #1 → 3 | Ex. 1, 2 |
| 1.5.4 Optimization | • #1, 3, 4, 6, 7 | Ex. 1 → 3 |

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| Math Websites |
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Cathy's website for course notes, outlines ... <http://frost.disted.camosun.bc.ca>

History of Mathematics

<http://www.groups.dcs.st-andrews.ac.uk/~history/> -history of math, bibliographies

Graphing

<http://math.exeter.edu/rparris/winplot.html> -graphing calculator emulator

<http://www.ticalc.org/pub/> -graphing calculator emulator files- generated by the public, proceed at your own risk.

http://mathgraphs.com/mg_main.html - Enlargements of graphs in your textbook

Lessons, Examples, Tutorials, Self-Tests,...

http://www.wtamu.edu/academic/anns/mps/math/mathlab/col_algebra/index.htm

algebra examples, tutorials

<http://mathforum.org/> - Ask Dr. Math

http://www.glencoe.com/sec/math/algebra/algebra1/algebra1_03/ - + calculator keystrokes

www.members.shaw.ca/ron.blond/index.html - Geometry/Trig with applications

Conics

www.camosun.bc.ca/~jbritton/jbconics.htm - Camosun instructor Jill Britton's website

Other Math related sites:

<http://MathCentral.uregina.ca/>

<http://en.wikipedia.org/wiki/Mathematics>

<http://mathworld.wolfram.com/about/>

<http://www.archimedes-lab.org/> - Fun activities

<http://shodor.org/interactivate/lessons/index.html>

<http://bctf.bc.ca/bcamt>