



**School of Arts & Science
MATHEMATICS DEPARTMENT**

**MATH 105-01
Algebra and Pre-Calculus
2007F**

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

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|-----|---------------|---|--------------------|--|
| (a) | Instructor: | Peggy Tilley | | |
| (b) | Office Hours: | Mon – Fri 10:00 – 10:45 and 2:00 – 2:30 | | |
| (c) | Location: | Ewing 244 | | |
| (d) | Phone: | 370 - 3502 | Alternative Phone: | |
| (e) | Email: | tilley@camosun.bc.ca | | |
| (f) | Website: | | | |

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 | Math 105 & 107 Exercise Sets |
| (b) | Calculator | Sharp EL 531W calculator |

References: There is no prescribed textbook for this course since no one book adequately covers the material we require. If you would like a reference book for a specific topic, we do have an assortment of textbooks in the math room and library. As well, videos and DVD's in the Lansdowne Library Viewing Room are available on 3 day loan.

4. Course Content and Schedule

Course Content: MATH 105 is an algebra and precalculus course. The main topics are algebra and a brief look at conic sections, functions, polynomial functions, rational functions, exponential and logarithmic functions, trigonometric functions and their inverses, trigonometric identities and equations. A brief introduction to calculus is provided throughout the course.

Comparison of Math 105 and 107 Math 107 is a lighter version of Math 105. If you need a UT Math 12 equivalent course for a BA degree or are heading for applied calculus for biology, business or social sciences, then you may wish to take Math 107 instead. Please come and see me or the chair of the mathematics department and we can talk about your particular situation. If you will be taking Math 100 (calculus for students in math, computer science, physics, chemistry, geology, etc) or one of the engineering technologies, then you need 105 rather than 107.

Class times: Section 1: Mon – Fri 8:30 – 9:50 in Y219
Section 2: Mon – Fri 12:30 – 1:50 in Y219
Feel free to mix and match (except on test days)

Math Rooms: Ewing 224 and Ewing 342
These are drop-in centres where you can work on your math homework and get free help from the math tutor or classmates.

Prerequisite: The minimum recommended prerequisite is a **recent C+** in either Math 11 or MATH 073. If you have not completed Math 11 within the past 2 years or Math 12 within the last 3 years, then you probably want to take either 072/073 or just 073 (all tuition free courses) this term. Please come and see myself (or the chair of the Math department) so that we can start you in the right course. Math 105 is an expensive course – we want to ensure that it is the best choice for you this term.

Out-of-class Workload: 1.5 – 2 hrs/day Mon – Fri (not 10 hours on Sunday!)
This is an intensive 6-credit course. If you fall behind, it will be very difficult to catch up.

Tests: There are 3 in class tests, 4 take-homes and 1 trigonometry proof test. All tests are based on the homework in the Math 105 & 107 Exercise Sets. The test dates are shown on the course calendar attached to this outline. Late take-homes are not accepted and there are no rewrites for missed tests. If you are too sick to hand in a take-home or write a term test (doctor's note required), then I will calculate a mark for the missed work based on how you do on that material on

the final exam.

Tips for Success:

1. Attend every class and work hard in class. Please ask questions if you don't understand something. Please turn off and put away cell phones, Ipods, etc. If you want to multi-task during class, feel free to work on your homework.
2. Do your homework every day. Unfortunately, math is not a spectator sport. It requires a lot of hard work and practice. Please work through the questions thoughtfully; don't just try to get your homework over with! On your timetable, schedule time each day for your math homework; it is really important to establish a routine.
3. Work with one or more classmates some of the time. It can keep you motivated and explaining concepts to others is a great way to check your understanding.
4. Please ask for help before you fall behind or get frustrated. If you can't get the correct answer, please bring me all your work so that I can see what you are thinking. I like to spend time explaining what is going wrong as well as nudging you towards a correct answer.

Mark to aim for:

If you are heading for Math 100 (calculus for students in mathematics, computing science, physics, chemistry, geology, etc), then you need a **B** in Math 105. For most other math courses and programs, a grade of **C** in Math 105 is sufficient. Note that many of our college programs and courses require C+ in Math 12 or C in Math 105.

5. Basis of Student Assessment (Weighting)

Grade Calculation: Please read carefully.

(1) To obtain a grade of **C+ or higher** in this course, you need to achieve an overall grade of at least 65% AND you must obtain at least 50% on both your term work and the final exam.

The reason that we require a passing term grade is that math that is learned slowly over a period of time is usually retained for longer; information that is crammed in just before a final exam may be quickly forgotten. We also require a passing grade on the final exam since it is a cumulative test that puts all the bits and pieces together.

(2) To obtain a grade of **B+ or higher** in this course, you need to achieve an overall grade of at least 77% AND at least 70% on both your term work and the final exam.

(3) To obtain a grade of **A** in this course, you need to achieve an overall grade of at least 85% AND at least 80% on both your term work and the final exam AND at least 85% on the trig proof test.

(4) To obtain a grade of **A+** in this course, you need to achieve at least 90% on your term work AND at least 90% on the trig proof test AND at least 90% on the final exam.

Subject to the conditions (1) – (4) above, up to 100% of your grade can be placed on the final exam. I compare each test mark and each take-home mark with your final exam mark. If the final exam mark is higher, then the final exam mark is used for that % of your grade. You'll have a chance to do some sample calculations on the first take-home to check that you understand how this grading system works.

| | | |
|------------------------------|------------|-------------------------------|
| Take-homes & Trig Proof Test | 20% | |
| 3 Tests | 30% | |
| Final Exam | 50% – 100% | subject to (1) – (4) above |
| Total | 100% | |

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 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. |
| IP | <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. <i>(For these courses a final grade will be assigned to either the 3rd course attempt or at the point of course completion.)</i> |
| CW | <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.

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.

Good luck and please come for help before you fall behind.