



CAMOSUN COLLEGE
School of Arts & Science
Department of Mathematics & Statistics

MATH-126-D01
Basic Discrete Mathematics
Winter 2021

COURSE OUTLINE

The course description is online @ <http://camosun.ca/learn/calendar/current/web/math.html>

Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

1. Instructor Information

(a) Instructor	Dr. Garret Flowers
(b) Office hours	Monday, Tuesday, Friday @ 11:30 – 12:20
(c) Location	online
(d) Phone	Alternative: _____
(e) E-mail	flowersg@camosun.ca
(f) Website	D2L (online.camosun.ca)

2. Intended Learning Outcomes

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

1. Establish the equivalence of compound propositions using truth tables and basic laws of logic.
2. Use rules of inference to determine the validity of arguments.
3. Translate English statements into quantified logic statements and vice versa.
4. Prove statements using direct and indirect proofs and ordinary and strong mathematical induction.
5. Prove set equivalences using membership, basic set identities and logical equivalences.
6. Determine whether functions are surjective, injective or bijective.
7. Compare the cardinality of finite and infinite sets through the use of bijections and distinguish between countable and uncountable sets.
8. Describe the growth of functions using big-O, big-Omega and big-Theta notation.
9. Solve problems using the fundamental concepts of number theory and perform simple proofs involving divisibility, prime factorization and congruences.
10. Use the Euclidean algorithm to find greatest common divisors and use other algorithms to convert numbers between different bases.
11. Define functions and sequences recursively.
12. Use permutations and combinations to solve counting and probability problems, including those in which repetition is allowed.
13. Apply the pigeonhole principle to solve counting problems.
14. Prove identities involving the binomial theorem using both algebraic and combinatorial arguments.
15. Model counting problems using recurrence relations.
16. Solve divide and conquer recurrence relations for $n=bk$ and give big-O estimates for increasing functions.
17. Identify and describe different types of graphs and their connectivity.

3. Required Materials

- (a) At least one of the following resources is strongly recommended:
- *Discrete Mathematics and Its Applications*, 7th edition or later by Rosen
 - *Math 126 Lecture Notes* by Garret Flowers (a coursepack available in the Camosun bookstore, or for free online)
- (b) Calculator: EL-531X or EL-531XG are the standard calculators required for all Camosun math courses. Other variations *may* be accepted, but only after gaining the approval of the instructor.

4. Basis of Student Assessment (Weighting)

16% - Assignments
54% - Quizzes
30% - Final Exam

Assignments: There will generally be an assignment due every other week.

Quizzes: There will be six quizzes, held on the following days:
Friday, January 22
Friday, February 5
Friday, February 26
Friday, March 12
Friday, March 26
Friday, April 9

Final Exam: The final exam is 3 hours in length and occurs after courses have ended.

5. Grading System

- | | |
|-------------------------------------|---------------------------------|
| <input checked="" type="checkbox"/> | Standard Grading System (GPA) |
| <input type="checkbox"/> | Competency Based Grading System |

6. College Supports, Services and Policies



Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence, Student Ancillary Fees, Academic Integrity, Grade Review & Appeals, Student Misconduct and Academic Accommodations for Students with Disabilities and Student Penalties and Fines.

A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

1. 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		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. 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 at

<http://camosun.ca/about/policies/index.html> 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 are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
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.