CAMOSUN
COLLEGE

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:	
(b)	Office Hours:	SEE BELOW
(c)	Location:	
(d)	Phone:	Alternative Phone:
(e)	Email:	
(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. Translate English statements into symbolic form and determine the truth value of the statement using truth tables or previously established equivalences between the logical connectives.
2. Formally prove that two sets are equal either by showing that each is contained in the other or by using identities which hold in any Boolean Algebra.
3. Compute the composition of two maps and distinguish between injective, surjective and bijective maps.
4. Prove mathematical statements using one of the Principles of Mathematical Induction.
5. Determine the solution set of congruences modulo some positive integer.
6. Carry out computations in the ring of integers modulo some positive integer.
7. Classify the elements of a ring as a unit, a zero divisor, an idempotent or a nilpotent element.
8. Prove or disprove, as the case may be, that a given algebraic system is a (i) group, (ii) ring, (iii) integral domain, (iv) field.
9. Prove when a subset of a group (resp. ring, field) is a subgroup (resp. subring, subfield).
10. Apply the isomorphism theorems to prove properties of the algebraic systems studied.
11. Provide numerous concrete examples to demonstrate the abstract theorems.

3. Required Materials

(a)	Texts	
(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.)

SEE BELOW

5. Basis of Student Assessment (Weighting)
(Should be linked directly to learning outcomes.)

(a)	Assignments	
(b)	Quizzes	
(c)	Exams	
(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 at **camosun.ca** or information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description

I	*Incomplete*: 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	*In progress*: 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	*Compulsory Withdrawal:* 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.

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.

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.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED

Mathematics 230
Modern Algebra
Winter, 2007

Instructor: George Ballinger
Office: Ewing 256
E-mail: ballinger@camosun.bc.ca
Website: ballinger.disted.camosun.bc.ca (click the MATH 230 link for course information)
Telephone: (250) 370-3116
Timetable:

Time	Monday	Tuesday	Wednesday	Thursday	Friday
10:30 am – 11:20 am					
11:30 am – 12:20 pm	MATH 126 Room Y217	MATH 126 Room Y217	MATH 126 Room Y217	MATH 126 Room Y217	
12:30 pm – 1:20 pm	Office Hour E256	Office Hour E256	Office Hour E256	Office Hour E256	
1:30 pm – 2:20 pm					
2:30 pm – 3:20 pm	MATH 230 Room Y217	MATH 230 Room Y217	MATH 230 Room Y217	MATH 230 Room Y217	
3:30 pm – 4:20 pm					
4:30 pm – 5:20 pm	Office Hour E256		Office Hour E256		
5:30 pm – 7:50 pm	MATH 073 Sec 3 Room E346		MATH 073 Sec 3 Room E346		

Important Dates:

January 7	First day of class
January 21	Tuition fees due date
February 14	Reading Break (no class)
March 10	Withdrawal date deadline
March 24	Easter Monday (no class)
April 10	Last day of class
April 14-22	Final Exam Period

Calendar Description: A first course in proofs and theoretical mathematics for mathematics, physics and computer science students. Topics include: sets, mappings, integers including postulates, induction, factorization and congruencies, groups including permutations, rings, integral domains, fields and polynomials and their factorization. [4 Credits]

(Source: Camosun College 2007-2008 Calendar
www.camosun.bc.ca/learn/calendar/current/web/math.html)

Prerequisites: B+ in MATH 110 or MATH 126.

UVic Transfer: A passing grade (D or higher) in this course will earn you transfer credit for UVic's MATH 233C "Introduction to Algebra" course.

Required Textbook:	*Modern Algebra* by Clive Reis, Camosun College Printshop, 2008.

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Course Content:

Chapter 1   Logic and Proofs
Chapter 2   Set Theory
Chapter 3   Cartesian Products, Relations, Maps, and Binary Operations
Chapter 4   The Integers
Chapter 5   Elementary Properties of Groups
Chapter 6   Further Properties of Groups
Chapter 7   The Symmetric Groups
Chapter 8   Rings, Integral Domains, and Fields
Chapter 9   Polynomial Rings

Math Labs: Ewing 224 & 342: These drop-in centres are freely available for your use to work on math homework and to seek help from the tutor on staff (see hours posted on door).

Study Time: It is recommended that approximately 8-10 hours per week be spent studying for this course outside of class time.

Calculator Policy: As per Math Department policy, the only calculator permitted for use on tests and the final exam is the Sharp EL-531W scientific calculator. No other make/model of calculator is permitted, nor are other electronic devices such as cell phones, PDAs, laptop computers, MP3 players, electronic translators, etc.

Assignments: There will be seven assignments to be handed in for marking.

Tests: There will be two term tests, Test 1 covering ch. 1-4 and Test 2 covering ch. 5-7.

Final Exam: A comprehensive final exam covering ch. 1-9 will take place during the final exam period of April 14-22. The specific date, time, and location will be announced sometime in February. You must write the final exam at this time as per Camosun College's policy on final examinations. See www.camosun.bc.ca/learn/calendar/current/pdf/academic.pdf.

Grade Calculation: The final grade will be calculated according to the following breakdown:

Seven Assignments:	25%
Two Term Tests:	25%
Final Exam:	50%

Grade Scale: Final letter grades are assigned as follows:

0-49	50-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100
F	D	C	C+	B−	B	B+	A−	A	A+

For information on Camosun College's grading policy, see Sec E-1.5 on the policy webpage www.camosun.bc.ca/policies/policies.html.