MATH 217 - Algebraic Structures with Applications

Fall Term 2006

Instructor: Kathleen Petersen
Office: 406 Jeffery Hall
Phone: 613-533-2412
email: petersen@mast.queensu.ca

Web Site: www.mast.queensu.ca/~math217

Time: Lectures: Monday 8:30, Tuesday 10:30, Thursday 9:30 (Slot 1)
      Tutorial: Friday 14:30

Place: 225 Jeffery Hall

Office Hours: Tuesdays 14:30-16:00

Text: Class Notes

Marking: Assignments: 20%
         Midterm Exam: 25%
         Final Exam: 55%

There will be no make up exams. If a student missed the midterm due to severe illness or personal tragedy, then the final exam will count towards 80% of the student’s mark. The final exam will be comprehensive.

Prerequisite: APSC 174 (Introduction to Linear Algebra)

Assignments: There will be 12 assignments, due each Monday in class. (Exceptions: Assignment 4 will be due Tuesday October 10 in class. Assignment 12 will be due Friday December 1 in tutorial.) Late assignments will not be accepted. The assignments and solutions will be posted on the class web site; no paper copies will be handed out. The lowest two marks will be dropped.

Midterm Exam: The Midterm is tentatively scheduled for Monday October 30.
Course Outline

The purpose of this course is to provide an introduction to abstract algebraic systems, and to illustrate the concepts with applications to communication engineering. Topics covered are:


2. Set theory and mappings

3. Equivalence relations

4. The integers: mathematical induction, the division algorithm, greatest common divisors, primes and unique factorization theorems, congruence classes

5. Group theory: groups, subgroups, cyclic subgroups, cosets and Lagrange’s theorem, quotient groups, homomorphisms and isomorphisms

6. Applications to error-control codes and cryptography