UNIVERSITY OF CALGARY

FACULTY OF SCIENCE

Mathematics and Statistics - MS 476
Ph: (403) 220-5203

COURSE INFORMATION SHEET

FALL 2009

1. PMAT/STAT 419 – Information Theory and Error Control Codes - Fall 2009

Lecture	Days	Time	Location	Instructor	Office	Phone
01	MWF	11:00	MS 431	M. Fenyvesi	MS 468	220-3965

email: fenyvesi@math.ucalgary.ca

2. **Prerequisites**:
NOTE: The Faculty of Science policy on pre- and co-requisite checking is outlined in the current University Calendar (see www.ucalgary.ca/pubs/calendar) *Faculty of Science, section 5C*. **It is the students' responsibility to ensure that they have the pre- and co-requisites for the course, and if they do not they will be withdrawn from the course without notice.**

3. Fee policy: After the last day to drop/add courses, there will be no refund of tuition fees if a student withdraws from a course, courses or the session.

4. Academic Accommodations: It is the student's responsibility to request academic accommodations. A student with a documented disability who may require academic accommodation must register with the Disability Resource Centre to be eligible for formal academic accommodation. DRC registered students are required to discuss their needs with the instructor no later than fourteen (14) days after the start of this course.

5. The University policy on grading and related matters is described in the current University Calendar, *Academic Standings*. In determining the overall grade in the course, the following weights will be used:

Assignments	[Approximately 5]	25 %
Midterm Test	[1]	25 %
Final Exam		50 %

A passing grade on the 75 % of the course assigned to the exams may be required to pass the course as a whole. There will be a final examination scheduled by the Registrar's Office. The use of aids such as open book, etc. **is not** permitted.

6. Missed Components of Term Work. The regulations of the Faculty of Science pertaining to this matter are outlined in the current University Calendar, *Faculty of Science, section 6A*. It is the student's responsibility to be familiar with these regulations.

7. Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the current University Calendar. See: http://www.ucalgary.ca/honesty/

8. *THERE WILL BE NO OUT-OF-CLASS-TIME ACTIVITY.*

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME ACTIVITY. If you have a conflict with any out of class time activity, please inform your instructor at least one week in advance of the activity so that other arrangements may be made for you.

_____ Date: _____

Department approval

9. Support Materials

The textbook for the first part of the course is "Information Theory and Coding", by Abramson, McGraw Hill Publishers, available from the bookstore. For the second part, some notes will be given out in class.

10. Exercises

Exercises will be assigned periodically and solutions will be discussed in class. It is important that all students solve these exercises as this ensures that course material is reviewed and that practice is obtained in applying the theory. It is not sufficient to just watch the instructor solve the exercises, as it is by reviewing the theory and then analyzing the problem and writing out the solution that theory and practice are related and the course content is learned. It is fine to discuss the exercises with other students.

11. Assignments

Four or five assignments, to be handed in for grading, will be given throughout the course. Some questions will involve calculations or constructions, while others will be more abstract. It is expected that students will solve the assignment questions alone and that careful solutions will be written. Assignments should have a cover sheet with your name, **but not your ID**, written at the top.

12. Attendance at Lectures

Attendance at all lectures is expected.

13. Examinations

A variety of questions will appear on examinations, some involving calculations or construction, some asking for definitions or theorems to be stated or discussed, as well as showing the proof of a theorem – a theorem previously proved in class. The final examination will be comprehensive but will have an emphasis on the material covered following the midterm examination.

14. Office Hours

Come to my office any time you have questions. If you know when you would like to come you can speak to me after class or send an email to make an appointment, or just drop by. Monday, Wednesday, Friday from 12:30 on is usually a good time to find me in my office.

15. Course Content

Concepts of information theory
Information sources including zero-memory and Markov sources
Codes including uniquely decodable and instantaneous codes
Shannon's Theorems
Huffman codes
Channel capacity
Error correcting and detecting concepts and codes
Linear codes including Hamming codes and perfect codes
Reed-Muller codes and cyclic codes
Decoding methods
The idea of convolutional codes.

This course uses both probability and algebra in these topics.

ACADEMIC SCHEDULE

September 8 (Tuesday)	Lectures begin.
September 18 (Friday)	Last day to drop courses.
September 22 (Tuesday)	Last day to add a course.
September 25 (Friday)	Balance of fees due.
October 12 (Monday)	Thanksgiving Day - **No lectures**.
October 30 (Friday)	**Mid-term exam.**
November 11-15 (Wednesday– Sunday)	Reading Days - **No lectures.**
December 8 (Tuesday)	Last day of lectures. Last day to withdraw from Fall Session classes.
December 11-21	Final examination period for Fall Session.