

## MATH 342, SECOND WINTER TERM, 2015

### 1. CONTACT INFORMATION

The instructor for this course is me, Ben Williams. I may be reached at [tbjw@math.ubc.ca](mailto:tbjw@math.ubc.ca). I try to reply to all student email within 24 hours.

The course website is <http://www.math.ubc.ca/~tbjw/342/index.html>.

#### OFFICE HOURS:

Provisionally these will be held

- Tuesdays 3:00-4:30
- Thursdays 11:00-12:30

in LSK 300.

If you have administrative (not directly math related) difficulties, you may also discuss these with me after class or at other times, by arrangement.

### 2. MEETING TIMES

The course meets at the following times:

- Tuesdays 9:30-10:50
- Thursdays 9:30-10:50

always in LSK 460.

### 3. TEXTBOOK

The textbook for this course is *A First Course in Coding Theory* by Raymond Hill.

### 4. HOMEWORK

Homework will be assigned throughout the course, at a rate of approximately one assignment every two weeks. Your lowest homework score will be dropped from all grade calculations.

The first assignment will be due on Thursday 15 January, at the start of class.

### 5. MIDTERM EXAMS

There will be two midterm exams. I reserve the right to change the time of these exams, but they will most likely happen in class on the 5th of February and again on the 5th of March.

## 6. OVERALL COURSE GRADE

The overall course grade will be made up from 10% homework, 30% midterms and 60% final exam.

No extensions will be given for homework under any circumstances. Students who are unable to take the midterm exams should contact me beforehand in order to make alternate arrangements.

Students who suffer serious injury or illness or bereavement during the course should contact me as well.

## 7. LIST OF TOPICS

The following is a list of topics that will be followed, and in the order given. The chapter of the textbook is also given, where applicable:

Week 1	5-6 Linear Codes
1 Introduction	Week 8
• Proof skills measurement (not for marks)	7 Generator and Parity Check Matrices
Week 2	• Midterm 2
2 Main Coding Theory Problem	Week 9
• Groups	7 Generator and Parity Check Matrices
Week 3	7 Syndrome decoding
• Groups (continued)	Week 10
• Abelian Groups	• Galois Fields
Week 4	Week 11
• Modular Arithmetic	• More Galois Fields
• Midterm 1	9 Perfect Codes
Week 5	Week 12
3 Finite Fields	10 Cyclic Codes
4 Vector Spaces over Fields	Week 13
Week 6	8 Hamming Codes
4 More Vector Spaces over fields	• TBD
Week 7	