SYLLABUS
Coding Theory, Spring, 2009

Instructor: James A. Davis
Office hours:
206 Jepson Hall 289-8094
MW 10:30-11:30, TR 10-11

I. COURSE DESCRIPTION: Coding Theory has developed over the last 60 years in response to the
explosion of electronic communication and computing possibilities. In all of these applications, there
is a recognition that electronic mistakes are always going to be a part of the systems that are being
built. Coding theory addresses this problem by providing efficient ways to include redundancy. The
ultimate goal is either to recognize that a mistake has been made and ask for retransmission or to
correct the mistake that has been made. We will discuss techniques that have been used in real world
situations.

The text for this course is “A first course in Coding Theory” by Raymond Hill. We will cover at
least the first 8 chapters and cyclic codes.

II. GRADING The most important part of the grading will be in the homework assignments. This will
account for 40% of the final grade. I will assign homework approximately once a week. There will
be varying degrees of difficulty among the assigned problems, and the harder problems will get more
points. I will usually assign about 70 points worth of homework each time, and you will turn in 50
points worth of problems (do not turn in all the problems and expect to get your best ones graded).
Many of the homework assignments will have a ⋆ problem: in order to get an A in this course, you
will need to complete 3 of these ⋆ problems perfectly with no help from anyone.

The second part of the grading involves in-class tests. There will be a midterm worth 20% of your
final grade and a (comprehensive) final worth 25%. These tests will be designed to examine your
understanding of basic concepts. I will try to keep these to mainly things that you have seen before.
The purpose of these tests is to help you see the big picture of the course, not to kill you with details.

A project will compose 15% of the grade. These can take many different shapes; some possibilities
include doing a section from a different book, writing a computer program to implement the codes
that we talk about, doing some outside reading about how codes are designed and used, etc. This
will provide an opportunity for you to study some advanced topic in detail, and then share that
information with the rest of the class. We will discuss the topics in February, and you will briefly
present these after Spring break. I hope that you can choose a topic that is interesting to you, and
that fits in with your particular background, and we will discuss how that can happen when we get
around to picking topics.

III. ATTENDANCE: You are expected to attend each class, but there will not be a penalty for missing
class.

IV. ACADEMIC HONESTY: Tests will be closed book, closed notes: you cannot receive help on the
tests from anyone except me. Homeworks are also to be pledged: your pledge on the homework
indicates you have not collaborated with anyone else (including those outside the class) and you have
not used any other sources such as the internet for your answers.