

Boğaziçi University
Department of Physics

Phys 497

Spring 2008

Information and Entropy

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Office hours: Tuesday 12:00-14:00 or by appointment.

Course schedule: TTThTh 1212 (block of 9:00-10:30)

Course page: “<http://alum.mit.edu/www/akdogan>”. Problem sets, exams, and general course information can be found here.

About the course: This is a course intended for freshmen of science and engineering departments. The course starts with the introduction of bits and codes. Then, information theory is explored further, covering compression, error correction, channels and processes, and the formalism of maximum entropy. Finally the relation with physical systems is examined, including energy and temperature. The course will include homework assignments, two midterm examinations, and a final. It is recommended that the prospective students had completed PHYS 101 and MATH 101, and completed PHYS 102/130 or taking PHYS 102/130 in parallel to this course. However, those who did not complete these can also register for the course with the consent of the instructor.

Prerequisites: Consent of instructor.

Required text: “*Information and Entropy: Introduction Lectures*” provided by open courseware of Massachusetts Institute of Technology.

Attendance: I expect you to come to class regularly and on time. You should be prepared to discuss the textbook material and to have worked on the assigned homework problems. I reserve the right to adjust your final course score up or down by a grade step based on the quality and extent of your contributions.

Homework: This will be a significant part of the learning process for this class. They will be handed out on Thursday, and will be due on the next Thursday at 9:00. Please staple the pages securely and leave them on my desk when you **enter** the classroom (i.e., do not work on the problem set during the class). The solutions will be discussed briefly during the problem sessions. No homework will be accepted once the solutions are given. Late homework can be accepted without penalty only if you have a valid excuse and the solutions are not discussed. Otherwise, the penalty rate for late submission is 10% per day (ex: if you hand in on Friday before 9:00, you'll lose 20% of the graded work.)

I encourage you to work collaboratively on the problems but you should understand that when you write up solutions the work is to be your own (i.e., *do not just copy someone's solution*). Do not be shy about coming to me or course assistants for help with the homework.

Exams: There will be two 50-minute midterms, and a 90-minute final exam. All exams will be closed book/closed notes. Calculators are neither needed nor allowed.

Grading: The weights that will determine the cumulative grade are as follows:

	Contribution
Homework	20%
Midterm I	20%
Midterm II	20%
Final	40%

The final grades will be determined according to the distribution of cumulative grades and the classroom contributions.