

DEPARTMENT OF MATHEMATICS, NORTHEASTERN UNIVERSITY

MTH G7241: Probability 1.

Fall 2009

Class: M,W 5:30-7:00 pm in 544 NI

Instructor: Prof. Chris King

Office: 437 Lake; phone 373-3905; king@neu.edu

Office hours: TBA

Course Webpage: http://www.math.neu.edu/~king_chris/7241F09/7241F09.html

Texts:

“A first look at rigorous probability theory”, J. S. Rosenthal, second edition (published by World Scientific).

“Introduction to Probability”, C. M. Grinstead and J. L. Snell, second revised edition (published by American Mathematical Society). Also available online from the CHANCE project, can be downloaded at <http://www.dartmouth/~chance/>.

Grading:

Homework problems will be assigned and graded each week. There will be a midterm test and a final exam.

List of main topics:

- 1). Review of elementary probability: events and random variables, conditional probability and expectation.
- 2). Probability triples: σ -algebras, Kolmogorov axioms, continuous random variables.
- 3). Moment generating functions and inequalities: Markov, Chebyshev, Jensen, Hölder.
- 4). Discrete-time Markov chains: finite state space, classification theorems.
- 5). Limit Theorems: 0 - 1 law, weak and strong laws, Central Limit Theorem.
- 6). Measure Theory: extension theorem, Lebesgue measure, independent sequences.