Stat 230 Introduction to Probability

Winter 2024

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University of Waterloo

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Contents

Chapter 1

Information of the course

The purpose of this page is to hold some of the additional materials provided by myself. Students should consult UW Learn system.

1.1 Course description

This course provides an introduction to probability models including sample spaces, mutually exclusive and independent events, conditional probability and Bayes' Theorem. The named distributions (Discrete Uniform, Hypergeometric, Binomial, Negative Binomial, Geometric, Poisson, Continuous Uniform, Exponential, Normal (Gaussian), and Multinomial) are used to model real phenomena. Discrete and continuous univariate random variables and their distributions are discussed. Joint probability functions, marginal probability functions, and conditional probability functions of two or more discrete random variables and functions of random variables are also discussed. Students learn how to calculate and interpret means, variances and covariances particularly for the named distributions. The Central Limit Theorem is used to approximate probabilities.

1.1.1 Instructor

Chi-Kuang Yeh, I am a postdoc at the *Department of Statistics and Actuarial Science*.

- Office: M3–3102 Desk 10. I will hold office hour in another location.
- Email: chi-kuang.yeh@uwaterloo.ca

1.1.2 Course Coordinator

Dr. Erik Hintz.

- Office: M3–2106

- Email: erik.hintz@uuwaterloo.ca

1.1.3 Logistic Issue

Contact Divya Lala

- Email: divya.lala@uwaterloo.ca or the undergrad advising email sasugr adadv@uwaterloo.ca.

Chapter 2

Lecture 1, January 08, 2024

In this lecture, we went over

1. Course syllabus and rules
2. Chapter 1 – Basic definition of probability. We also saw the potential ambiguities when defining probabilities.