

UQ, STAT2201, 2017,
Lecture 9.
Unit 10 – Further Stats Overview

2-7: **Bayes' Theorem**

7-4.3: **Bayesian Estimation of Parameters**

3-7: **Geometric and Negative Binomial Distributions**

3-9: **Poisson Distribution**

3-8: **Hypergeometric Distribution**

4-9: **Erlang and Gamma Distributions**

4-10: **Weibull Distribution**

4-11: **Lognormal Distribution**

4-12: **Beta Distribution**

5-3.1: **Multinomial Distribution**

4–7: Normal Approximation to the Binomial and Poisson Distributions

5–6: Moment-Generating Functions

7–3.1: Unbiased Estimators

7–3: Other general concepts of point estimation

7–4.1: Method of moments for point estimation

7–4.2: Method of maximum likelihood for point estimation

9-9: **Nonparametric Procedures**

10-3: **Wilcoxon Rank-Sum Nonparametric test for the difference of two means**

9-7: **Testing for Goodness of Fit**

9-8: **Contingency Table Tests**

8-4: Large Sample Confidence Intervals for a Population Proportion

8-6: Bootstrap Confidence Interval

9-4: Tests on the Variance and Standard Deviation of a Normal Distribution

9-5: Tests on a Population Proportion

10-4: The paired t-test

10-5: Inferences on the variances of two Normal distributions

10-6: Inferences on two population proportions

11-9: **Regression on Transformed Variables**

Chapter 12: **Multiple Linear Regression**

Chapter 13: **Design and Analysis of Single-Factor Experiments: The Analysis of Variance**

Chapter 14: **Design of Experiments with Several Factors**

Chapter 15: **Statistical Quality Control**

Guest Lectures

Chris did a PhD in computational quantum physics at UQ, before moving into scientific and geospatial software development at Fugro Roames. At work, he uses various programming languages including julia, C++, python and java to turn large unstructured geospatial data sets into structured information. Chris is passionate about open source software, both as a user and maintainer of several libraries and tools written in C++ and julia, some of which can be found at <https://github.com/c42f>.

I trained in Maths and Physics before doing a PhD in Engineering at UQ on dynamics and contact mechanics. I have undertaken research on Railway Dynamics, Rapid Prototyping with ISF and Biological Signal Processing. Since moving away from academia and into private industry I have worked for Fugro Roames, primarily on feature detection in Lidar and Imagery. As an undergraduate I used to think statistics was painfully dull, but seeing the amazing things you can do with Bayesian Inference on a computer has converted me.