

# MTH5119 (MAS234) Sampling, Surveys and Simulation

## Key Objectives

A basic knowledge of the following will enable you to pass this course. To obtain a high mark you should know this and the other material to a greater depth.

1. Recognize and describe the differences between simple random sampling (SRS), stratified random sampling (StRS), and cluster sampling. Understand when each of them is useful.
2. Understand the effect of the sampling mechanism on estimation of population parameters and use the appropriate estimator in simple situations.
3. Obtain the variances of estimators corrected for finite populations, and appropriate sample estimators of these variances
4. Explain the practical problems involved in designing and implementing a sample survey by questionnaire.
5. Work in groups to design and pretest a questionnaire, implement a sample survey, analyse the resulting data and make a presentation.
6. Simulate random samples from finite populations and standard infinite populations, using MINITAB to relate the results to statistical theory.
7. Simulate simple stochastic processes