

Applied Mathematics and Computational Science Qualifying Exam Guidelines
Department of Mathematics and Computer Science, Chulalongkorn University

SUBJECT: Foundations of Applied Statistics

Topic 1- Sampling

- Simple Random Sampling
- Stratified Random Sampling
- Cluster Random Sampling

Topic 2- Distribution and Parameter Estimation

- Distributions in Statistics
- Properties of distributions
- Parameter Estimations
- Sampling Distributions

Topic 3- Goodness of fit tests

- Test of independence
- Test of Data distributions
- Test for Normality

Topic 4- Linear Regression Models

- Correlation between variables
- Test for normality
- Simple Linear Regression
 - Model properties, parameter estimation, Hypothesis Tests and Model diagnosis
- Multiple Linear Regression
 - Model properties, parameter estimation, Hypothesis Tests and Model diagnosis
- Model Selection
 - Correlation test
 - Types of Variable Selection Criteria
 - Forward Selection
 - Backward Selection
 - Stepwise Selection

Topic 5 – Generalized Linear Regression Model

- Logistic Regression Model
- Log-linear Regression Model

Topic 6- ANOVA

- One-Way Model
- Two-way Model