

Class Number: 3818 Delivery Method In Person

COURSE TIMES + LOCATION:

Tu 2:30 PM – 4:20 PM

REMOTE LEARNING, Burnaby

Th 2:30 PM – 4:20 PM

REMOTE LEARNING, Burnaby

INSTRUCTOR:

Richard Lockhart

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Office: SC-K10561

PREREQUISITES:

STAT 450 or permission of the instructor.

Description

CALENDAR DESCRIPTION:

The statistical theory that supports modern statistical methodologies. Distribution theory, methods for construction of tests, estimators, and confidence intervals with special attention to likelihood and Bayesian methods. Properties of the procedures including large sample theory will be considered. Consistency and asymptotic normality for maximum likelihood and related methods (e.g., estimating equations, quasi-likelihood), as well as hypothesis testing and p-values. Additional topics may include: nonparametric models, the bootstrap, causal inference, and simulation. Students with credit for STAT 801 may not take this course for further credit.

COURSE DETAILS:

We will be discussing how to develop and evaluate statistical methods: we survey various general statistical techniques: prediction, forecasting, point and interval estimation, and hypothesis testing; we discuss how to assess how well a specific technique works in repeated sampling terms: forecast standard error; standard error of estimation, coverage probabilities, error rates; we consider optimality theory; throughout we examine trade-offs: bias versus variability, type I versus type II error rates, interval coverage versus precision or length, mechanistic versus empirical models, and others. The vision is that we use the techniques of probability to discuss

inference in the face of uncertainty. I will start with inference and will in background in probability as needed. Prediction is chapters 6 through 11 of the Larry Wasserman's text All of Statistics but I don't think you really need the text.

1. Probability: random variable, expectation, inequalities, and convergence
2. Inference: Parametric models. The vision is Larry Wasserman's

: I will lecture for about 1 hour 40 minutes Tuesdays and Thursdays at 2:30 PM = 1430h Pacific Time on-line using either Zoom or Blackboard Collaborate Ultra through Canvas at SFU. The lectures will be recorded so that students in other time zones can watch at their convenience another

