a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

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STAT 536A/B Statistical Theory for the Design and Analysis of Clinical Studies
2016/17 Term 2
Instructor: Rollin Brant

Time and Place: T/TR, 9:30-11:00 AM, ESB 4192

Prerequisites: Open to any interested graduate students in the Department of Statistics.
Graduate students from other departments are welcome, provided they have sufficient statistical and mathematical backgrounds (roughly, mathematical statistics to the level of UBC STAT 460/461). Such students should consult the instructor about suitability. To be clear, this course is aimed at training statisticians or biostatisticians, so understanding the math and computing behind the methods is the central part of the course.

Textbook/course materials: Readings will be assigned from e-books and journal articles available in the UBC library. A main reference will be Regression Methods in Biostatistics : Linear, Logistic, Survival, and Repeated Measures Models by Vittinghoff, Glidden, Shiboski and McCulloch.
Chapters 1-4 provide an excellent review of basic applied methods while Chapters 5-6 will be partly review, depending on prior coursework. Chapters 7 to 9 comprise the main elements of 536A.

Assessment: Evaluation will be based on class participation, homework, and a final project.

Notes: This course is not for credit for students who have taken Stat 536C.

Topics: In particular we will consider methods of analysis for:

- binary response data, including contingency tables, logistic regression, case-control and matched case control studies,
- survival data, including censoring, KM estimator, log-rank test, Cox models, and AFT models.
- longitudinal data, including linear mixed effects models and GEE models.
- Model selection, including AIC/BIC criteria.
- Confounding in observational data - regression, matching stratification, propensity score, counterfactual variables, instrumental variables, and time-varying confounding.

Since this course covers a wide variety of topics, the emphasis will be on understanding of the basic concepts and methods (rather than detailed mathematical derivations) and application of the methods to real world problems.