STAT 540 – STATISTICAL PROBLEMS ARISING IN GENOMICS
2011/2012 – Term 2

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This year the course will be offered by Jenny Bryan and Paul Pavlidis. The topics mentioned are reasonably indicative but the instructors will be revamping the course so closer to January 2012 please check Jenny's website (http://www.stat.ubc.ca/~jenny/) for more developments in the syllabus.

Instructors: Jenny Bryan (jenny@stat.ubc.ca)
           Paul Pavlidis (paul@chibi.ubc.ca)

When/where: Mon & Wed 9:30 - 11:00 am, SWNG 307

Objectives: (a) To provide students from the computational sciences, especially statistics, an introduction to the exciting problems arising in genomic research; and
(b) to provide students with a primary background in molecular biology and biochemistry with an introduction to the statistical techniques that are particularly relevant for genomic data. Emphasis will be placed on gene expression profiling, but we may also cover selected topics in other genome-wide investigations (ChIP-chip, tiling arrays, SNP arrays, etc.).

Requirements: There will be 2 data analysis-oriented assignments and a term project.

Background and skills, grading, etc.: See course website, URL given above.

Topics (tentative, not necessarily in order, more detail available from course website)

- Overview of bioinformatics and computational biology.
- Basic molecular biology and genetics.
- Intro to gene expression profiling techniques.
- DNA Microarrays (spotted and Affymetrix).
- Normalization.
- Multivariate techniques (PCA, Clustering).
- Multiple testing.
- Bayesian modeling.