NOTICE OF UNIVERSITY ORAL

GEODESY AND GEOMATICS ENGINEERING

Master of Science in Engineering

Hon Shing (Richard) Chan

Monday, April 21, 2008 @ 10:00 am

Head Hall – Room C25 – ADI Room

Board of Examiners:

Co-Supervisors: **Dr. David Coleman, GGE**
Dr. Doug Willms, CRISP

Examining Board: **Dr. Marcelo Santos, GGE**
Dr. Yun Zhang, GGE
Mr. Scott Murray, Adjunct Professor, CRISP

Chair: **Dr. Richard Langley, GGE**

Incorporating the Concept of 'Community' into a Spatially-Weighted Local Regression Analysis

ABSTRACT

Linear regression has long been used to find relationships among various factors. However, when observations are spatially dependent or spatially heterogeneous the results from a linear regression model are distorted. Researchers developed Geographically Weighted Regression (GWR) to address these problems. It applies the linear regression model at a local level such that each data point has its own set of parameter estimates based on a distance-decay weighting of 'neighbouring observations'. This model, however, is susceptible to the influence of 'outliers'. A Bayesian approach of the GWR method (BGWR) was introduced to address the outlier problem by including various parameter smoothing strategies in the model. This approach provides an opportunity to incorporate the 'community' concept in social sciences to account for the community effect that cannot be addressed by the GWR or distance-based BGWR models. This thesis proposed a 'community-based' BGWR model that improves the prediction power by reducing the overall prediction errors. It also brings significant improvement in the estimation of regression parameters for certain local areas.

Faculty Members and Graduate Students are invited to attend this presentation.