Spatial Epidemiology
Bio 631 – Fall 2018 – 1 credit

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Organizational meeting:
Friday, 7 September 2018 - CCIS 1-243 9:00-10:00 am

Spatial epidemiology is the study of describing and understanding the disease distribution relevant to various geographical factors, such as demographic, environmental, behavioral, socioeconomic, genetic, and infectious risk factors. Study of spatial epidemiology is getting more and more attention, as it is closely related to environmental changes, especially those caused by human activities, and public health issues. Force of infection (FOI) is a key concept in epidemiology, which refers to the risk of infection experienced by susceptible individuals. Based on FOI, the spatial transmission of infectious diseases can be classified into four types : patch transmission, distance transmission, group transmission, and network transmission. Several methods are used to investigate spatial epidemiological problems, such as Bayesian approaches, and matrix population models, including age-structured and stage-structured models. Besides the above methods, some mathematical tools in multi-variable analysis are also useful to assist the understanding of data, with the help of some programming languages, e.g., Matlab. Estimation of parameters will also be included, using examples of chronic wasting disease, or parasite-host interaction.

Format: 1.5-hr weekly seminars from 1 October to 7 December 2018

Credit Requirements:

- Presentation(s) on a topic relevant to your research (good review of topic)
- Active participation in discussions
- Preparation of draft 2-3 page summary of the topic with references