

Special topics for Biosystems Modeling 2: Advanced Models

Time: Spring 2013 (Module 2)

Description

Based on the need of Dalhousie graduate students who are willing to use modeling approach for their own research related to biosystems, two modules on special topics of modeling are designed in focusing mainly on the conception and resolution of mathematical models applied to biosystems. In this module 2, learners will deal with the advanced modeling technique related to deterministic models based on partial differential equations (PDE), hydrodynamic and reaction-diffusion models and numerical methods for the resolution.

Prerequisites

Module 1, MATH 2000 or MATH2001.

Delivery: Each module will comprise of 5 weeks of 3 hour lectures/labs.

Evaluation: Assessment of this module will be in the form of weekly assignments (20%) and a final project to be submitted at the end of module (80%). 100% if there is a manuscript ready to be submitted.

Instructor:

Dr. Tri Nguyen Quang

Collaborators: Dr. Jin Yue, Dr. Haibo Niu

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Content of the Module 2

Topic 1: Approaches to Deterministic Models via Differential equations.

Topic 2: Reaction-Diffusion model.

Topic 3: Hydrodynamic model or reaction-diffusion-advection equation.

Topic 4: Discretisation and Numerical simulation approach

Topic 5: Concretization of your research by a model.