Fall 2020

SYLLABUS

Course title	**SEMINAR IN BIOMATHEMATICS**
Course number	MAT 6932
Schedule, Room	**MWF 8**, LIT 207
Instructor	Maia Martcheva maia@ufl.edu http://people.clas.ufl.edu/maia/
Office Hours	MWF 3rd period or by appointment
Main theme	**PDEs in Mathematical Epidemiology**

Goals: Students will be introduced to the topic of infectious disease modeling on population level using PDEs (partial differential equations). Students will develop skills to form and analyze simple PDE mathematical models of infectious diseases. Further, they will develop skills to compute the basic reproduction number. Students will also learn to compose numerical methods for PDE models in mathematical epidemiology.

Topics:

(1) Age structured population models.
(2) Age structured epidemic models - analysis and numerics.
(3) Age-since-infection structured models.
(4) Multi-scale nested immuno-epidemiological models
(5) Spatial epidemic models.

Prerequisites: No prior class of PDEs is necessary. Taking BioMath Seminar in Fall 2019 is a prerequisite. Coding will be done in Mathematica or Matlab. Knowing these CAS or having desire to learn them will be useful.

Requirements:

(1) Students will be expected to make presentations. In particular, each student will present a paper of choice.
(2) There will be some homework problems assigned which will be completed in small teams.
(3) There will be a short personal project assigned where students will have to convert their own dissertation model into a PDE model.
(4) Students will be expected to attend class.
(5) We will use Mathematica and Matlab for computation. Having access to the software may help you learn more in the class.

Grading: Grades will be based on (1) Attendance; (2) Presentations; (3) Homework and project.