Fall 2015

SYLLABUS

Course title	**BIOMATHEMATICS SEMINAR 1**
Course number	MAP 6487
Schedule, Room	**MWF 7**, Lit 233
Instructor	Maia Martcheva
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Main themes	**An Introduction to Mathematical Epidemiology**

Goals: To introduce students to the topic of infectious disease modeling. Develop skills to form and analyze simple mathematical models of infectious diseases. Develop skill to compute the basic reproduction number.

Topics:

(1) Introducing the SIR and SIS models.
(2) The SIR Model with demography. Techniques for analysis of 2x2 ODE systems.
(3) Modeling vector-borne diseases. Delay equations.
(4) Building more complex ODE epidemic models. Techniques for computation of $\mathcal{R}_0$.
(5) Fitting ODE Epidemic Models to data.
(6) Discrete-time epidemic models.

Prerequisites: No graduate prerequisites. Familiarity with differential equations and elementary linear algebra will be useful.

Requirements:

(1) Students will be expected to make presentations. In particular, each student will present a paper of choice. Alternatively, students may make a presentation on their current research projects if related to epidemiology.
(2) There will be some homework problems assigned which will be graded.
(3) Students will be expected to attend class.
(4) 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) Homework and presentations.