COURSE DESCRIPTION

**EVALUATION**

We focus on learning and mastery. You are guaranteed the following grades if your Foundation (NSF) DMS awards #0636648, #1148695, and #1722563.

**Course Website:**

The course syllabus and grades will be posted on Canvas.

**Class Location:**

Manchester 388

**Office Hours:**

M 3:00-4:00, T 12:00-1:00, T 2:00-3:00 W 12:00-2:00

**Objectives**

The course objectives are to:

1. Develop mathematical models of epidemiological processes.
2. Learn the qualitative analysis for ODEs and PDEs.
3. Learn the numerical methods for ODEs and PDEs.
4. Learn the decision making tools in epidemiological control.

**Class Structure**

- **Lectures:**
  - The course will follow the textbook closely. There will be in-class discussions related to the topic of the day.
  - Students are expected to read the assigned sections the night before the lecture.

- **Assignments:**
  - These assignments will consist of in-class group work in which students will use Matlab or R.
  - These assignments will be submitted on Canvas in the form of a Mathematica file, Matlab script, whatever.
  - These assignments will be graded on completion, accuracy, and presentation.

- **Computational Assignments:**
  - These assignments will be written clearly using complete sentences as appropriate (see homework policy).
  - All homework must be your own work, address you properly, you are required to work through some of the problems from the text. You can seek help from your colleagues, but you must submit your own work.

- **Term Paper:**
  - Every graduate student is required to write a term paper on a chapter from the text that I address you properly, you are guaranteed at least 5% bonus.

**Term Paper for graduate students (5% bonus for undergraduates)**

- **Due:**
  - 11/30: Optimal Control part II,
  - 12/07: Final Exam at 2:00

**Computational Assignments and Term Paper (20%)**

- **Grading:**
  - 11/25: Lyapunov functions,
  - 11/9: SEIR model,
  - 10/28: Examples of fitting epidemic models to data,
  - 10/12: Building complex epidemiological models,
  - 10/7: SIR model with population growth,
  - 9/30: Epidemics on adaptive networks,
  - 9/23:
  - 9/21: Global Stability,
  - 9/16:
  - 9/14: Linearization and asymptotic stability,
  - 9/7: SIR model with population growth,
  - 8/31: Qualitative analysis of nonlinear first order ODEs,
  - 8/26: Estimating parameters in SIR Model, SIS model,
  - 8/26: Estimating parameters in SIR Model, SIS model,
  - 8/20: Next generation approach part II,
  - 8/13: Next generation approach part I,
  - 8/9: Jacobian approach to computing

**Course Environment**

**Title IX**

- **Violations:**
  - If you experience or know of a Title IX violation, you have many options for support and/or reporting; see titleix.wfu.edu/ for details.
  - If you are concerned about non-discrimination, see diversity.wfu.edu/

**Diversity**

- **Violations:**
  - If you experience or know of a Title IX violation, you have many options for support and/or reporting; see titleix.wfu.edu/ for details.
  - If you are concerned about non-discrimination, see diversity.wfu.edu/

**Academics**

- **Violations:**
  - If you experience or know of a Title IX violation, you have many options for support and/or reporting; see titleix.wfu.edu/ for details.
  - If you are concerned about non-discrimination, see diversity.wfu.edu/

**Attendance**

- **Violations:**
  - If you experience or know of a Title IX violation, you have many options for support and/or reporting; see titleix.wfu.edu/ for details.
  - If you are concerned about non-discrimination, see diversity.wfu.edu/

**Special Accommodations**

- **Violations:**
  - If you experience or know of a Title IX violation, you have many options for support and/or reporting; see titleix.wfu.edu/ for details.
  - If you are concerned about non-discrimination, see diversity.wfu.edu/

**Honor Code**

- **Violations:**
  - If you experience or know of a Title IX violation, you have many options for support and/or reporting; see titleix.wfu.edu/ for details.
  - If you are concerned about non-discrimination, see diversity.wfu.edu/

**Library Use**

- **Violations:**
  - If you experience or know of a Title IX violation, you have many options for support and/or reporting; see titleix.wfu.edu/ for details.
  - If you are concerned about non-discrimination, see diversity.wfu.edu/

**Tests**

- **Violations:**
  - If you experience or know of a Title IX violation, you have many options for support and/or reporting; see titleix.wfu.edu/ for details.
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**Course Policies**

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**Grading Policy**

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**Attendance Policy**

- **Violations:**
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**Cheating**

- **Violations:**
  - If you experience or know of a Title IX violation, you have many options for support and/or reporting; see titleix.wfu.edu/ for details.
  - If you are concerned about non-discrimination, see diversity.wfu.edu/

**Academic Integrity**

- **Violations:**
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**Omissions**

- **Violations:**
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**Lateness**

- **Violations:**
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**Non-Discrimination**

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