The only way to learn the material well (and thus receive a good grade) is by solving many problems, and struggling to solve the more challenging ones. Unfortunately, there is no shortcut. Please read all the relevant sections in the textbook.

Homework problems will be assigned bi-weekly. Please only submit highlighted problems for grading. Please hand the problems to me before the class begins. You may discuss these problems with other students, but you must independently write up and submit your own solutions. Copying any part of a solution from a book, solutions guide, or website is cheating! Students are expected to abide by the Georgia Tech Academic Honor Code.

Late homeworks will not be excepted, but you may drop your two lowest homework grades. Emailed homeworks will only be accepted with prior agreement of the Instructor - else they will not be accepted.

To receive credit for a solution, you must clearly indicate how you obtained your solution. You will receive no credit without an explanation. Please keep your written answers brief; be clear and to the point. The grader will deduct points for rambling and for incorrect or irrelevant statements. Please do not show arithmetic and most algebra calculations.

In order to grade as many problems as possible, your submitted problem sets should be printed very neatly in large “font” and stapled. Please do not cross out. Write on only one side of each page, in a single column, and do not use paper that has been torn out of spiral bound notebooks. You may typeset your solutions, but this is not required.

1. Provide all details of the proof that if two $2 \times 2$ matrices each have one negative and one positive eigenvalue, then their phase flows are topologically conjugate.

2. Nitecki, page 363-4: 8, 10, 16, 19, 22, 23, 24. For the first four problems, carefully sketch as much of the phase plane as possible.

3. Nitecki, page 377-8: 1, 2, 3, 7, 9, 10, 12