Differential Equations 11:00-11:50AM Spring 2003 Hickok 207

Instructor: Jonathan White
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Problem Sets & Labs: There will be occasional problem sets, as well as lab assignments on designated class days, and together these will total 200 points (about 29% of the final grade).

Exams: There will be three in-class exams administered during class time. The dates of these are indicated in the schedule on the back side of this sheet. These exams will be worth 100 points (about 14% of the final grade) each.

The final exam will be held during the finals week at the date and time indicated on the back side of this sheet. The final will be worth 200 points (about 29% of the final grade).

Grading: Grading will approximately follow a 90% A, 80% B, 70% C, 60% D scale.

Makeups: Makeups for exams will generally be allowed only under extenuating circumstances, with documentation and advance notice when humanly possible. Late problem sets and labs will generally not be accepted, and if accepted due to extenuating circumstances will generally be subject to a penalty of 20% of the possible points for each day past due.

This class is intended to give a solid modern introduction to differential equations. This means that graphical and numerical approaches will be taken as seriously as conventional analytic methods, and that qualitative statements will be as important as quantitative solutions.

The use of technology, particularly computer software, will be an important component of the course. Ability to compute with pencil and paper will also be important, as will conceptual understanding of the topics treated.

This combination of approaches is likely to prove challenging, partly because few people will find that all of these aspects play to personal strengths. Don’t let that be overwhelming, though, and remember that I’m around to help.
## Tentative Schedule

| Monday, February 10<sup>th</sup>  
1.2 Separation of Variables | Wednesday, February 5<sup>th</sup>  
1.1 Modeling via Diff. Equations | Friday, February 7<sup>th</sup>  
1.1 Modeling (continued) |
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| Monday, February 17<sup>th</sup>  
1.5 Existence and Uniqueness | Wednesday, Feb. 12<sup>th</sup>  
1.3 Slope Fields | Friday, February 14<sup>th</sup>  
1.4 Euler’s Method |
| Monday, February 24<sup>th</sup>  
1.7 Bifurcations | Wednesday, Feb. 19<sup>th</sup>  
1.6 Equilibria | Friday, February 21<sup>st</sup>  
Lab |
| Monday, March 3<sup>rd</sup>  
1.9 Changing Variables | Wednesday, March 5<sup>th</sup>  
Review | Friday, March 7<sup>th</sup>  
Exam 1 |
| Monday, March 10<sup>th</sup>  
2.1 Modeling via Systems | Wednesday, March 12<sup>th</sup>  
2.2 The Geometry of Systems | Friday, March 14<sup>th</sup>  
2.3 Analytic Methods |
| Monday, March 17<sup>th</sup>  
2.3 Analytic Methods | Wednesday, March 19<sup>th</sup>  
2.4 Euler’s Method for Systems | Friday, March 21<sup>st</sup>  
Lab |
| March 24<sup>th</sup> - 28<sup>th</sup>  
Spring Break -- No Class | | |
| Monday, March 31<sup>st</sup>  
2.5 The Lorenz Equations | Wednesday, April 2<sup>nd</sup>  
Series Solutions | Friday, April 4<sup>th</sup>  
Lab |
| Monday, April 7<sup>th</sup>  
Review | Wednesday, April 9<sup>th</sup>  
Registration -- No Class | Friday, April 11<sup>th</sup>  
Exam 2 |
| Monday, April 14<sup>th</sup>  
3.1 Linear Systems | Wednesday, April 16<sup>th</sup>  
3.2 Straight-Line Solutions | Friday, April 18<sup>th</sup>  
3.3 Phase Planes & Real Eigenvalues |
| Monday, April 21<sup>st</sup>  
3.4 Complex Eigenvalues | Wednesday, April 23<sup>rd</sup>  
3.5 Repeated and Zero Eigenvalues | Friday, April 25<sup>th</sup>  
Lab |
| Monday, April 28<sup>th</sup>  
3.6 Second-Order Linear Equations | Wednesday, April 30<sup>th</sup>  
3.7 The Trace-Determinant Plane | Friday, May 2<sup>nd</sup>  
3.8 Linear Systems in 3D |
| Monday, May 5<sup>th</sup>  
Review | Wednesday, May 7<sup>th</sup>  
Exam 3 | Friday, May 9<sup>th</sup>  
Lab |
| Monday, May 12<sup>th</sup>  
Additional Topic to be determined | Wednesday, May 14<sup>th</sup>  
Additional Topic to be determined | Friday, May 16<sup>th</sup>  
Review |
| Thursday, May 22<sup>nd</sup>  
Final Exam 2pm | | |