INSTRUCTOR: Dr. A. Bonfoh
COURSE #: MATH 465
TITLE: Ordinary Differential Equations


OBJECTIVES: The course aims to introduce basic concepts of existence, uniqueness, asymptotic behavior and stability of solutions to ordinary differential equations.


PREREQUISITES: MATH202, or MATH280.

LEARNING OUTCOMES: Upon completion of this course, students should be able to:
1. Solve 1st order linear systems with constant coefficients.
2. Prove existence, uniqueness and continuation of solutions to 1st order systems.
3. Analyze the asymptotic behavior of solutions to linear systems.
4. Obtain phase portrait of 2-dimensional autonomous systems.

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<tr>
<th>Week</th>
<th>Date</th>
<th>Ch.</th>
<th>Topics</th>
<th>Homework Problems</th>
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<tr>
<td>1-3</td>
<td>Sep 17-Oct 5, 2018</td>
<td>1</td>
<td>Systems of differential equations</td>
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<tr>
<td>4-7</td>
<td>Oct 8-Nov 2, 2018</td>
<td>2</td>
<td>Linear systems with an introduction to phase space analysis</td>
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<td>8-10</td>
<td>Nov 5-Nov 23, 2018</td>
<td>3</td>
<td>Existence theory</td>
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<td>11-13</td>
<td>Nov 26-Dec 14,2018</td>
<td>4</td>
<td>Stability of linear and almost linear systems</td>
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<td>14-15</td>
<td>Dec 17-Dec 28, 2018</td>
<td>5</td>
<td>Lyapunov’s second method</td>
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GRADING:  
Exam I, II (Weeks 5 and 10, resp.) 20% each  
Class work (homework assignments, projects) 30%  
Final Exam 30%