Course: Ordinary Differential Equations  
Section Number 3332, M: 7:00 -10:10 p.m.

Instructor: Dr. R. L. Smazenka  
Office Hours: Monday 4:00 -6:00  
Or by appointment  
Office: CSB 107  
Phone: (818) 364-7609  
Email: smazenrl@lamission.edu

Text: Differential Equations with Modeling Applications, 8th edition  
Dennis G. Zill, author

Important Dates:  
Last day to drop without a “W”: Monday, 3-3-08  
Last day to drop with a “W”: Monday, 5-5-08  
Date of Final: Monday, 6-2-08, 8:00 – 10:00 pm

Course Outline  
We will cover the first seven chapters of the textbook. After introducing some basic definitions we begin by treating the cases of separable and exact equations. Solutions by numerical methods and substitution are also covered. A brief introduction to qualitative analysis for autonomous equations using phase portraits is given. Selected first order linear and nonlinear models are covered next. We next treat higher order linear initial-value and boundary-value problems. Methods here include reduction of order, undetermined coefficients, and variation of parameters. Solving a system of such equations is introduced and the Cauchy-Euler equation is treated. Models for both damped and undamped spring-mass systems are studied next. Series solutions about both ordinary and singular points are covered next. Our last topic is the Laplace transform where we extend the basic definition and properties using translations of the s and t-axes. The Dirac Delta function is also introduce here.  

I personally feel that success in more advanced mathematics courses depends to a large extent on a basic understanding of mathematical logic. The ability to read and understand theorems and definitions and follow a proof requires that the student be able to translate a statement into a proper logical proposition, understand when the proposition is true or false, and consider logically equivalent propositions. For this reason I will introduce these topics as they arise and are related to topics from the textbook.

Homework and Exams  
Homework will be assigned, collected and a subset will be graded. These are due at the beginning of class on the day specified. No late homework will be accepted. Since the exams will closely resemble homework exercises, success in this course strongly depends on diligently completing all assignments in a timely fashion. I cannot stress this last point enough! We will have four exams and a comprehensive final. No make-up exams will be given. I will drop the lowest exam score, except for the final, and it will not be factored into your final course grade. Successful students should plan to spend at least 4 hours of study outside of class for each hour of discussion. This translates into a minimum of 12 additional hours per week.

Special Note: The textbook is extremely good. The author provides a high level of mathematical rigor and many exercises are quite intriguing and reveling. It is rare to find a text for an introductory course that I enjoy reading, but Zill's book is one of those. I strongly encourage you to read the text carefully. The lectures are designed as a supplement to and not an alternative for the textbook.
**Class comportment**
All students are expected to arrive on time. Late arrivals are disruptive to both the lecturer and students. We will have a short break about midway through the class period. Once you are seated, do not leave the room until the break. Such comings and goings are also disruptive. Students must turn off all pagers and cell phones while in class. Students are encouraged to ask questions and make comments on the lecture material. This should be done in a courteous manner by raising one’s hand and being recognized. Side conversations between students that disrupt the flow of the lecture will not be tolerated. It is the student’s responsibility to manage his or her academic workload. Should a student decide to stop attending class it is their responsibility to drop the class. All students appearing on the grade roster will receive a grade regardless of whether they are attending classes or not.

**Grading**
Your final grade is based on the homework and exams with percentage contribution to your that grade as follows.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>20</td>
</tr>
<tr>
<td>Exams (Best 3)</td>
<td>60 %</td>
</tr>
<tr>
<td>Final</td>
<td>20 %</td>
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</tbody>
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**Learning Outcomes**
1. Classify differential equations; solve initial values problems.
2. Solve differential equations by separation of variables, by substitution and numerical methods.
3. Solve linear and nonlinear equations and systems; solve modeling problems.
4. Solve higher order differential equations; solve equations with constant or variable coefficients; solve equations using the Cauchy-Euler method.
5. Solve linear and non-linear boundary value problems.
6. Solve linear equations by power series about ordinary and singular points.
8. Solve homogenous linear first-order systems.