MATH 275 ORDINARY DIFFERENTIAL EQUATIONS
SYLLABUS
FALL 2014

Instructor: Tom Reuterdahlt
Meeting Time: Thursday 7:00 – 10:05 pm  Room: 7-7111
Office Hours: Wednesday 6:00 pm – 7:00 pm  Room 7-7304 and/or by email.
Thursday 6:00 pm – 7:00 pm  Room 7-7111
TBA Hours: This course requires 1 hour per week of TBA
Course Materials:
Required: Differential Equations, 4th Edition
Authors: Paul Blanchard, Robert L. Devaney, Glen R. Hall
NOTE: Previous editions of the text are not acceptable!
Student Solutions Manual
TI 83 calculator or equivalent

Dates: August 21  Math 275 begins
December 18  Final exam

Prerequisite: Math 253 (Calculus III) with a grade of C or better

Technology: You must have internet access for course materials. In addition, you must have access to
a printer as there will be a number of documents you will be required to print and turn in during the
semester. If this is a problem, let me know immediately.

My email address for all correspondence is reuterdahlt@smccd.edu. Note: My last name is Reuterdahl
not reuterdahlt as in my email address! In order to be sure your messages don’t get lost, ALWAYS
put the text string MATH 275 in the Subject line of your message. If you fail to do so I probably will
not respond to your message.

It is IMPERATIVE that you check the course website frequently for updates and new course
materials!! All information & weekly assignments will be available at
http://www.smccd.edu/accounts/reuterdahlt.
Failure to know what’s going on in the course because you did not look at the website is no excuse!

ALL SMART PHONES, DUMB PHONES, TABLETS, COMPUTERS, OR ANY OTHER DEVICE(S)
USED FOR COMMUNICATING WITH THE OUTSIDE WORLD, MUST BE TURNED OFF DURING
CLASS UNLESS I STATE OTHERWISE! NO EXCEPTIONS!!

Note: I will limit any use of hand-held or wireless technology that disrupts learning opportunities,
degrades the learning environment, promotes academic dishonesty or illegal activities. Students who
require access to hand-held or wireless technology as assistive measures for documented disabilities
may use them according to their accommodations as provided by the Disabled Student and Services
program. A violation of this policy will result in disciplinary action to be determined by the instructor.
Sanctions are explicitly stated in the College’s Student Code of Conduct.
A word about teaching:

“Teachers open the door. You enter by yourself.” - Chinese Proverb.

Teaching means to organize and present the material, provide exercises and projects which challenge you, and to evaluate your work. What you learn depends on what work you do -- if you get a good grade, don’t thank me, thank yourself.

When I evaluate your work, I must judge what you say and particularly write. When I hear someone say "I understand the material, but I can’t do the problems." I know that it means "I have a superficial understanding of the material, but I have not yet mastered it to the level which will allow me to do the problems." Be professional about your written work (there is no excuse for sloppy work).

Skyline my.smccd.edu email addresses:
To avoid missing important messages from myself or from the College/District, please activate your student email account by logging in at http://my.smccd.edu/ if you have not already done so. All messages regarding the course will be sent to you through this email address.

How to forward your my.smccd.edu email to another email address:
Your instructor (that’s me!), and Skyline College, will use your my.smccd.edu email account to share information with you. If you don’t check that email, you will miss important news. If you don’t want to check your my.smccd.edu account, and you would rather use an email account such as Hotmail, yahoo, Gmail, or another, please take a few minutes to set up forwarding for your my.smccd.edu email to your regular account. Follow these steps:
1. Go to Websmart at https://websmart.smccd.edu/
2. In your student account area, click on the link that says "New! Student Email"
3. Here, you may view your email address and password, and you may reset your password.
4. IMPORTANT: Open your my.smccd.edu email.
5. Click "Settings" at the top of the page.
6. Click the "Forwarding and POP/IMAP" tab.
7. Under Forwarding, click the "Forward a copy of incoming mail" button.
8. Enter the email address you want to forward your email to
9. Click "Save Changes."
Let me know ASAP if you have any difficulties with this!

Preparation for Class: You must come to class with text and calculator each class period and with all work completed as assigned. Failure to do so may result in being dropped from the class. You are expected to spend a minimum of two hours outside of class for each hour spent in class. I expect nothing less than your best effort. If that is a commitment you are unwilling to make, drop the course now.

Attendance is expected and required. I begin class on time and I come to class prepared. I expect you to do the same. If you miss a class, you remain responsible for material covered. Irregular or poor attendance is grounds for being dropped from the course or at the least will result in reducing your final grade by one or more letters.

Breaks: We will take breaks during the evening. DO NOT wander in and out of class while class is in session. It is disruptive and annoying. We’re not in high school anymore.

You are responsible for adhering to the Code of Student Conduct outlined in the Skyline College Catalog and the Skyline Student Handbook, available online. Students who engage in disruptive behavior - conduct that interferes with the instructional, administrative, or service functions of the course - may be subject to disciplinary action, including suspension and/or expulsion from the course and/or college. Specifically, cell phone interruptions, the use of iPods, habitual profanity or vulgarity, and continued willful disobedience will result in disciplinary action.

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Academic Integrity: The work you submit/present must be your own. The Skyline College Student Handbook has a complete statement defining cheating and plagiarism, available online. If you are caught cheating or plagiarizing another person's work, you may be disciplined in one or more of the following ways:

1. Dropped from the course.
2. You may be referred to the College Disciplinarian for further sanctions which range from a warning to expulsion from Skyline College.

Dropping the course. If you decide to drop the course BE SURE to do so properly. If you fail to notify the Skyline administration office you will receive a grade of "F" for the course. No exceptions.

Grading Policy:
There is no "grade curve" in the course. I will set grades as follows:
90-100% A, 80-89.999% B, 70-79.999% C, 60-69.999% D, below 60% F

Your grade will be determined as follows (Dates are tentative and subject to change):
Homework 5% weekly. Late homework will not be accepted.
TBA Review sheets 15% weekly. Late TBA sheets will not be accepted.
Lab Project (Lab 1.3) 10% 12/11
Midterm exam 1 15% 10/02
Midterm exam 2 20% 11/20
Final exam 35% 12/18

Makeup exams: In general there are NO makeup exams in the course. However, in case of an emergency, a makeup exam will be considered only if the event is documented, in writing, by a health professional or other responsible person familiar with the event. Otherwise, if you miss an exam you will receive a zero for that exam.

Extra Credit Policy: There is no extra credit available for this course – please don’t ask!

TBA hours: 1.0 TBA hours per week are required for the course. For each section covered in each chapter you must create TBA review sheets. The sheets are to be handed in along with, but separate from, each homework assignment. A TBA sheet template will be provided on the week 1 assignment page on the website. Use of this template is required. No exceptions.

Homework assignments:
Do all required assignments. If you do not do the homework it will be very difficult, if not impossible, to pass the exams and the course. Mathematics is not a spectator sport!! Good hard work is the best approach to maximize your probability of success.

Each week I will post a homework "cover sheet" on the website which will contain the assigned problems for the week. Print out a copy of the cover sheet and append it to the front of your homework assignment before you hand it in. No cover sheet, no credit for the assignment. No exceptions. I have good reasons for this requirement.
**Student Learning Outcomes:**
Upon completion of the course:

- Through real world applications, students will be able to create, manipulate, solve, and interpret mathematical models describing various physical phenomena using scalar or vector differential equations.
- Students will be able to apply analytical, numerical, and qualitative methods to achieve solutions to a wide class of differential equations.
- Students will develop skills for effectively solving problems at an introductory level of differential equations study.

**Available Support Services:** The Learning Center (Building 5) provides support for writing, reading, mathematics, and other subjects. Sign up for LSKL 800 for general tutoring. Librarians, on the 2nd floor of building 5, can assist with research projects and library questions. Academic counselors, health services, and other student support services are available in the Student Services Center in Building 2.

**Disability:** In coordination with the DSPS office, reasonable accommodation will be provided for eligible students with disabilities. If you do not yet have an accommodation letter, please contact the DSPS office at (650) 738-4280.

**Course Content:**
Chapter and Section numbers refer to the text, *Differential Equations*, 4th Edition, by Paul Blanchard, Robert L. Devaney, Glen R. Hall

**Chapter 1 First-Order Differential Equations**
1.1 Modeling via Differential Equations
1.2 Analytic Technique: Separation of Variables
1.3 Qualitative Technique: Slope Fields
1.4 Numerical Technique: Euler’s Method
1.6 Equilibria and the Phase Line
1.7 Bifurcations
1.8 Linear Differential Equations
1.9 Integrating factors for Linear Equations

**Chapter 2 First-Order Systems**
2.1 Modeling via Systems
2.2 The Geometry of Systems
2.3 The Damped Harmonic Oscillator
2.4 Additional Analytic Methods for Special Systems

**Chapter 3 Linear Systems**
3.1 Properties of Linear Systems and the Linearity Principle
3.2 Straight-Line Solutions
3.3 Phase Planes for Linear Systems with Real Eigenvalues
3.4 Complex Eigenvalues
3.5 Special Cases: Repeated and Zero Eigenvalues
3.6 Second-Order Linear Equations
3.7 The Trace-Determinant Plane

**Chapter 4 Forcing and Resonance**
4.1 Forced Harmonic Oscillators
4.2 Sinusoidal Forcing
Chapter 5 Nonlinear Systems
   5.1 Equilibrium Point Analysis
   5.2 Qualitative Analysis
   5.3 Hamiltonian Systems

**IMPORTANT NOTE:** The topic schedule is tentative and subject to change in the event of extenuating circumstances. The following homework assignments are, depending on circumstances, subject to change at any time.

**WEEK #1**

8/21  Homework assignment due 8/28
     Chapter 1 First-Order Differential Equations
     Read Sections 1.1 - 1.3
     Exercises
     Section 1.1  # 1, 3, 6, 7, 10, 17, 20, 21
     Section 1.2  # 1, 3, 7, 13, 27
     Section 1.3  # 1, 5, 6, 7, 9, 13, 16, 22