Instructor:	Jonathan White
E-Mail:	JWhite@Coe.Edu
Web Page:	http://www.coe.edu/~jwhite/
Office:	Stuart 316
Office Hours:	9:10-9:50 MTWF, and by appointment
Office Phone:	399-8280
Home Phone:	362-3350 (between 7am and 10pm)
Text:	*Differential Equations*, 2nd Edition, Blanchard, Devaney, and Hall
Problem Sets and Labs:	There will be occasional problem sets, as well as lab assignments on designated class days, and together these will total 200 points.
Math Culture:	Math Culture Points will constitute 50 points. These will be earned through various activities outside of class, as detailed on page 3 of this syllabus.
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 each. The final exam will be held during finals week at the date and time indicated on the back side of this sheet. The final will be worth 200 points.
Grading:	Grading will approximately follow a $[92.0\%, \infty) \to A$, $[90\%, 92\%) \to A-$, $[87\%, 90\%) \to B+$, $[82\%, 87\%) \to B$, $[80\%, 82\%) \to B-$, $[77\%, 80\%) \to C+$, $[72\%, 77\%) \to C$, $[70\%, 72\%) \to C-$, $[67\%, 70\%) \to D+$, $[62\%, 67\%) \to D$, $[60\%, 62\%) \to D-$, $(-\infty, 60\%) \to F$ scale. Current grade information will be available online through Moodle at all times.
Makeups:	For the sake of fairness to those who follow the schedule, makeups for exams will be allowed only under extenuating circumstances, with documentation and advance notice when humanly possible. Late problem sets 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. Give it some time, and feel free to take advantage of my office hours to help past the rough spots.

DIFFERENTIAL EQUATIONS   11:00-11:50AM   SPRING 2014   STUART 306

Tentative Schedule

Monday 1/13 §1.1 Modeling via Diff. Equations	Wednesday 1/15 §1.2 Separation of Variables	Friday 1/17 §1.3 Slope Fields
Monday 1/20 **No Class – MLK Day**	Wednesday 1/22 §1.4 Euler's Method	Friday 1/24 §1.5 Existence and Uniqueness
Monday 1/27 §1.6 Equilibria & the Phase Plane	Wednesday 1/29 §1.7 Bifurcations	Friday 1/31 §1.8 Linear Differential Equations
Monday 2/3 §1.9 Changing Variables	Wednesday 2/5 Undetermined Coefficients	Friday 2/7 Lab
Monday 2/10 Series Solutions	Wednesday 2/12 Review	Friday 2/14 **Exam 1**
Monday 2/17 §2.1 Modeling via Systems	Wednesday 2/19 §2.2 The Geometry of Systems	Friday 2/21 §2.3 Analytic Methods
Monday 2/24 §2.3 Analytic Methods	Wednesday 2/26 §2.4 Euler's Method for Systems	Friday 2/28 Lab
Spring Break		
Monday 3/10 §2.5 The Lorenz Equations	Wednesday 3/12 §6.1 Laplace Transforms	Friday 3/14 §6.1 Laplace Transforms
Monday 3/17 §6.2 Discontinuous Functions	Wednesday 3/19 Review	Friday 3/21 **Exam 2**
Monday 3/24 §3.1 Linear Systems	Wednesday 3/26 §3.2 Straight-Line Solutions	Friday 3/28 §3.3 Phase Plane & Real Eigenvalues
Monday 3/31 §3.4 Complex Eigenvalues	Wednesday 4/2 §3.5 Repeated and Zero Eigenvalues	Friday 4/4 §3.7 The Trace-Determinant Plane
Monday 4/7 §3.6 Second-Order Linear Equations	Wednesday 4/9 §3.8 Linear Systems in 3D	Friday 4/11 Lab
Monday 4/14 Variation of Parameters	Wednesday 4/16 Review	Friday 4/18 **Exam 3**
Monday 4/21 §4.1 Forced Harmonic Oscillators	Wednesday 4/23 §4.2 Sinusoidal Forcing	Friday 4/25 §4.3 Undamped Forcing
Monday 4/28 §5.1 Equilibrium Point Analysis	Wednesday 4/30 Review	
Final Exam – 11am on Saturday 5/3		

Any students with disabilities which might affect their performance in this class should contact me as soon as possible to arrange accommodations.

Coe's faculty has adopted an academic integrity policy. It is your responsibility to understand and follow it.

Diversity, in all its forms, is valuable.

Math Culture Points

A significant portion of the grade for this course will take the form of Math Culture Points. These will be earned through activities outside of class including, but not necessarily limited to, those listed below. Note that none of these is mandatory – there are more than enough opportunities than necessary to earn full credit. You should be able to select activities the are particularly relevant to you.

Activity	Points	Max #
Colloquium Attendance	5	–
Colloquium Presentation	5-15	2

Meeting Attendance
    Nebraska Conference for Undergraduate Women in Mathematics (Jan. 31 - Feb. 2)
    SIGCSE Technical Symposium (March 5 - 8)
    University of Iowa Computing Conference (early March?)
    Midwest Undergraduate Mathematics Symposium (April 11 - 12)
	
	15
	10
	10
	10-15
		2

Mathematics Competition Participation
    Mathematical Contest in Modeling (February 6 - 10)
    Iowa Collegiate Mathematics Competition (March 1)
	15	2

Math Culture Reading
    Some weeks specific readings will be posted on the course web page
    Articles from *Math Horizons*
    With approval, columns on maa.org, articles from *Math. Magazine*, *The College Math. Journal*
	5	
		–
		3
		3

Math Club Activities (when appropriate) Winter Break Book, Movies, Pi Day celebration, Speakers, Workshops, etc.	5-10	5
Volunteer Math Outreach Working with students at McKinley Middle School, etc.	5	3

Other Appropriate Coe Activities
    Contemporary Issues Forum
    Attending a Quantitative Research Symposium Presentation
    Job Shadowing in any relevant field
	
	5
	5
	10
		
		–
		3
		1

You should plan to spread your participation throughout the semester. In each case above, credit assumes both full participation and posting a brief summary/response on Moodle **in a timely manner**. These reflections should generally be between 100 and 300 words, and include both a brief summary and your personal thoughts on the event, and **must be submitted within one week of the event**, or within the specified time window for other activities. Up to three units (30 points) of credit may be submitted after normal deadlines in the "Math Culture – Late" category on Moodle, but otherwise exceptions will not be made without serious extenuating circumstances.