Calculus 2 MTWF 10:00-10:50am Spring 2012 Stuart 309

Instructor:	Jonathan White
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Office:	Stuart 316
Office Hours:	MTWF 9:00-9:50am and by appointment
Office Phone:	399-8280
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Text:	*Calculus, Early Transcendentals, 1st Edition*, Briggs & Cochran
Problem Sets, Quizzes, WW:	There will be several problem sets and quizzes during the semester, as well as online WeBWorK assignments. Combined these will be worth 150 points.
Math Culture Points:	Each student has the option of including Math Culture Points in their grade. A slate of Math Culture activities is available on a separate sheet. If included, this component will be worth 50 points.
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 90% A, 80% B, 70% C, 60% D scale. Current grade information will be available 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 and quizzes 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. Late WeBWorK will not be accepted.

The "Big Idea" of Calculus is using mathematics to deal with change. Calculus 1 deals primarily with rates of change, and Calculus 2 addresses accumulations – the totals toward which changing quantities tend. These ideas cut across all quantitative disciplines – whether it's a falling stone, a falling stock, a declining population, or an endothermic reaction, there are mathematical commonalities, and those are what Calculus deals with.

Calculus 2 is a continuation of topics introduced in Calculus 1, but with a greater depth and sophistication. The problems get bigger, and the ideas get bigger as well. Some truly interesting questions become answerable, and more aspects of the world come within reach, but the techniques involved become substantially more difficult.

To enter this class, each student must pass (score of 80% or more) a computer-administered derivatives "gateway" exam. You may attempt this exam as often as desired, provided that you demonstrate understanding of previous mistakes before a retake. Success by 5pm Friday, January 20th will count as 10 points toward a student's WeBWorK score, but after 5pm Friday, January 28th course grades will be lowered by 10% for each week or portion of a week without passing this exam.

The use of technology, particularly the software package *Mathematica*, 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 and topics is likely to be challenging, partly because few will find that all of these aspects play to their strengths. Don't let that be overwhelming, though – remember that I'm around to help.

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Tentative Schedule

		Wednesday, January 11th §4.8 Antiderivatives	Friday, January 13th §5.3 The Fun. Theorem
Monday, January 16th **No Class – MLK Day**	Tuesday, January 17th §5.5 Substitution	Wednesday, January 18th §6.1 Velocity & Net Change	Friday, January 20th §6.2 Areas between Curves
Monday, January 23rd §6.3 Volume by Slicing	Tuesday, January 24th §6.4 Volume by Shells	Wednesday, January 25th §6.5 Length of Curves	Friday, January 27th §6.6 Physical Applications
Monday, January 30th §6.6 Physical Applications	Tuesday, January 31st §6.7 Log & Exp Functions	Wednesday, February 1st Review	Friday, February 3rd **Exam 1**
Monday, February 6th §7.1 Integration by Parts	Tuesday, February 7th §7.1 Integration by Parts	Wednesday, February 8th §7.2 Trig Integrals	Friday, February 10th §7.3 Trig Substitution
Monday, February 13th §7.4 Partial Fractions	Tuesday, February 14th §7.5 Integration Strategy	Wednesday, February 15th §7.5 Integration Strategy	Friday, February 17th §7.6 Numerical Integration
Monday, February 20th §7.7 Improper Integrals	Tuesday, February 21st §7.7 Improper Integrals	Wednesday, February 22nd Surface Area	Friday, February 24th Applications to Economics
Monday, February 27th Applications to Probability	Tuesday, February 28th Applications to Probability	Wednesday, February 29th Review	Friday, March 2nd **Exam 2**
Spring Break			
Monday, March 12th §8.1 Overview	Tuesday, March 13th §8.2 Sequences	Wednesday, March 14th §8.3 Infinite Series	Friday, March 16th §8.4 Integral Test
Monday, March 19th §8.5 Comparison Tests	Tuesday, March 20th §8.5 Ratio Test	Wednesday, March 21st §8.6 Alternating Series	Friday, March 23rd §8.6 Alternating Series
Monday, March 26th §9.1 Polynomial Approx.	Tuesday, March 27th §9.2 Properties of Power Series	Wednesday, March 28th §9.2 Properties of Power Series	Friday, March 30th §9.3 Taylor Series
Monday, April 2nd §9.3 Taylor Series	Tuesday, April 3rd §9.4 Using Taylor Series	Wednesday, April 4th Review	Friday, April 6th **Exam 3**
Monday, April 9th §10.1 Parametric Equations	Tuesday, April 10th §10.1 Parametric Equations	Wednesday, April 11th **Student Research Symposium**	Friday, April 13th §10.2 Polar Coordinates
Monday, April 16th §10.3 Calculus in Polar	Tuesday, April 17th §10.4 Conic Sections	Wednesday, April 18th §10.4 Conic Sections	Friday, April 20th §7.8 Differential Equations
Monday, April 23rd §7.8 Differential Equations	Tuesday, April 24th §7.8 Differential Equations	Wednesday, April 25th Review	
Final Exam – 8am on Saturday, April 28th			

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

The faculty has adopted a policy on academic integrity. It is your responsibility to understand and follow it.

Diversity, in all its forms, is valuable.

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Math Culture Points

A significant portion of the grade for this course may 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:

Activity	Points	Max #
Colloquium Attendance	5	–
Colloquium Presentation	5-15	2
Meeting Attendance		2
Nebraska Conference for Undergraduate Women in Mathematics (Jan. 27 - 29)	15	
Iowa Council of Teachers of Mathematics (February 17)	10	
SIGCSE Technical Symposium (Feb 29- March 3)	10	
Midwest Undergraduate Mathematics Symposium (April 13 - 14)	10-15	
Mathematics Competition Participation	10	2
Mathematical Contest in Modeling (Feb. 9 - 13)		
Iowa Collegiate Mathematics Competition (February 25)		
Math Culture Reading	5	
Some weeks specific readings will be posted on the course web page		–
Articles from *Math Horizons*		3
With approval, columns on maa.org, articles from *Math. Magazine*, *The College Math. Journal*		3
Math Club Activities (when appropriate)	5-10	5
Winter Break Book, Movies, Pi Day celebration, Speakers, etc.		
Volunteer Math Outreach	5	3
Working with students at Polk Elementary, etc.		
Other Appropriate Coe Activities	5	–
Contemporary Issues Forum		
Attending a Quantitative Research Symposium Presentation		
Psychology Experiment Participation		

Generally Math Culture Points can be earned for at most two activities in any given week, so 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. 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**.