CALCULUS 3 MTWF 9-9:50AM/1-1:50PM FALL 2013 SH309/SH405&SH103

Instructor:	Jonathan White
E-Mail:	jwhite@coe.edu
Web Page:	public.coe.edu/~jwhite
Office:	Stuart 316
Office Hours:	MTWF 10:00-10:50am, MW 2:00-2:25pm, and by appointment
Office Phone:	399-8280
Home Phone:	362-3350 (between 7am and 10pm)
Text:	*Calculus, Early Transcendentals*, 1st Edition, by Briggs & Cochran, Addison-Wesley.
Problem Sets, Quizzes & WW:	There will be several problem sets and quizzes during the semester, as well as online WeBWorK assignments. Together these will be worth 200 points
Math Culture Points:	Math Culture Points will constitute 50 points. These will be earned through participation in various activities outside of class, as detailed on the third page 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%, ∞) → A, [90%, 92%) → A–, [87%, 90%) → B+, [82%, 87%) → B, [80%, 82%) → B–, [77%, 80%) → C+, [72%, 77%) → C, [70%, 72%) → C–, [67%, 70%) → D+, [62%, 67%) → D, [60%, 62%) → D–, (–∞, 60%) → 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 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.

Any student entering this class should already be aware that calculus is the mathematics of changing quantities. The major development in Calculus 3 is that we widen our scope to functions of more than one variable. This simultaneously adds tremendously to the breadth of phenomena that can be addressed, and also introduces complications that have no analog in the essentially two-dimensional world of Calculus 1 and 2.

Calculus 3 is the culmination of the calculus sequence, and this presents challenges in at least three respects. First, ability to visualize and use spatial intuition is taken to a new level. Second, computations are in some cases correspondingly bigger and longer. Third, abstract theoretical considerations become a more central element, increasingly overshadowing mere computations as the most important material. In response to all three of these considerations the judicious use of technology can be a valuable aid. Sophisticated calculators such as the TI-89 and computer software packages such as *Mathematica*, when used well, can lead to easier and deeper understanding of the course material. However the use of this technology itself involves a significant learning experience, and often significant frustrations. We will attempt to use *Mathematica* in this course when the benefits are the greatest, and assist you in its use enough to keep the frustrations to a minimum.

To enter this class, each student must pass a computer-administered antiderivatives "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, August 30th will count as 10 points toward a student's WeBWorK score, but after 5pm Friday, September 6th course grades will be lowered by 5% for each week or portion of a week without passing this exam.

If at some point the challenges or frustrations of this class get too bad, I strongly encourage you to see me for extra explanation – don't wait until you're overwhelmed. I'm here to help.

CALCULUS 3 MTWF 9-9:50AM/1-1:50PM FALL 2013 SH309/SH405&SH103

Tentative Schedule

Monday, August 26th §11.1-2 Vectors	Tuesday, August 27th §11.3 Dot Products	Wednesday, August 28th §11.4 Cross Products	Friday, August 30th §11.5 $\mathbf{f}:\mathbb{R}\to\mathbb{R}^3$
Monday, September 2nd No Class – Labor Day	Tuesday, September 3rd §11.5 $\mathbf{f}:\mathbb{R}\to\mathbb{R}^3$	Wednesday, September 4th §12.1 Planes & $f:\mathbb{R}^2\to\mathbb{R}$	Friday, September 6th §12.2 Surfaces Graphically
Monday, September 9th §12.1-2 Planes & $f:\mathbb{R}^2\to\mathbb{R}$	Tuesday, September 10th §12.3 Limits & Continuity	Wednesday, September 11th §12.4 Partial Derivatives	Friday, September 13th §12.5 Chain Rule
Monday, September 16th §12.6 Dir. Der. & Gradients	Tuesday, September 17th §12.7 Tangent Planes	Wednesday, September 18th §12.8 Optimization	Friday, September 20th §12.8 Optimization
Monday, September 23rd §12.9 Constrained Opt.	Tuesday, September 24th §12.9 Constrained Opt.	Wednesday, September 25th Review for Exam	Friday, September 27th **Exam 1**
Monday, September 30th §13.1 Double Integrals	Tuesday, October 1st §13.1 Double Integrals	Wednesday, October 2nd §13.2 Double Integrals	Friday, October 4th §13.2 Double Integrals
Monday, October 7th No Class – Fall Break	Tuesday, October 8th No Class – Fall Break	Wednesday, October 9th §13.3 Double Int. in Polar	Friday, October 11th §13.4 Triple Integrals
Monday, October 14th §13.4 Triple Integrals	Tuesday, October 15th §13.5 Triple Int. in Cylindrical	Wednesday, October 16th §13.5 Triple Int. in Spherical	Friday, October 18th 13.6 Applications
Monday, October 21st 13.6 Applications	Tuesday, October 22nd §13.7 The Jacobian	Wednesday, October 23rd Review for Exam	Friday, October 25th **Exam 2**
Monday, October 28th §11.6-7 $\mathbf{f}':\mathbb{R}\to\mathbb{R}$	Tuesday, October 29th §11.6-7 $\mathbf{f}':\mathbb{R}\to\mathbb{R}$	Wednesday, October 30th §11.8-9 Length & Curvature	Friday, November 1st §14.1 Vector Fields
Monday, November 4th §14.1 Vector Fields	Tuesday, November 5th §14.2 Line Integrals	Wednesday, November 6th §14.2 Line Integrals	Friday, November 8th §14.3 The Fun. Theorem
Monday, November 11th §14.4 Green's Theorem	Tuesday, November 12th §14.5 Divergence and Curl	Wednesday, November 13th §14.5 Divergence and Curl	Friday, November 15th §14.6 Surface Integrals
Monday, November 18th §14.6 Surface Integrals	Tuesday, November 19th §14.7 Stokes Theorem	Wednesday, November 20th §14.8 Divergence Theorem	Friday, November 22nd §14.9 The Fun. Theorem
Monday, November 25th Review for Exam	Tuesday, November 26th **Exam 3**	Wednesday, November 27th No Class – Thanksgiving Break	Friday, November 29th No Class – Thanksgiving Break
Monday, December 2nd Quadratic Approximations	Tuesday, December 3rd Complex Arithmetic	Wednesday, December 4th The Complex Plane	Friday, December 6th Review for Final
Monday, December 9th Review for Final	Reading Day		
Final Exam – 8am Thursday, December 12th / 11am Friday, December 13th			

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.

Math Culture Points

A 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:

Activity	Points	Maximum
Colloquium Attendance	5	–
Colloquium Presentation	5-15	2
Conference Attendance Iowa Section of the MAA (October 5th-6th)	5-15	2
Mathematics Competition Participation Iowa Mathematical Modeling Competition (t.b.d.) Putnam Competition (December 7th)	10	2
Math Culture Reading Some weeks specific readings will be posted on the course web page With approval, any relevant column on MAA.org With approval, any relevant article from *Math Horizons*, *CMJ*, etc.	5	 – 3 3
Math Club Activities (when appropriate) Movies, Speakers, Game Nights, math portion of Playground of Science, etc.	5	--
Volunteer Math Outreach Working with students at McKinnley Middle School, etc.	5	2

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 submitting a brief summary/response via Moodle. These reflections should generally be between 100 and 300 words, and include both a brief summary and your personal thoughts on the event or reading.