REAL ANALYSIS 1 MWF 10:00-10:50AM FALL 2012 STUART 309

Instructor:	Jonathan White
E-Mail:	jwhite@coe.edu
Web Page:	public.coe.edu/~jwhite/
Office:	Stuart 316
Office Hours:	MTW 3:00-3:50pm and by appointment
Office Phone:	399-8280
Home Phone:	362-3350 (between 7am and 10pm)
Text:	*A Friendly Introduction to Analysis, Single and Multivariable*, 2nd Edition, by Witold Kosmala, Prentice-Hall; *A Tour of the Calculus*, by David Berlinski.
Problem Sets:	Problem Sets will be given throughout the term to supplement class work. Combined these will be worth 200 points.
Math Culture Points:	Math Culture Points will constitute 100 points. These will be earned through participation in various activities outside of class, as detailed elsewhere.
Exams:	There will be two exams during the course of the semester, 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.

"And what are these fluxions? The velocities of evanescent increments. And what are these same evanescent increments? They are neither finite quantities, nor quantities infinitely small, nor yet nothing. May we not call them ghosts of departed quantities?"

-Bishop George Berkeley, 1685-1753

Real Analysis is in many ways a dramatically different course than anything which precedes it in the mathematics curriculum. In some regards, students finally get a chance to see the sorts of things that professional mathematicians deal with -- but at the same time, many of these underpinnings are beneath notice once they've been properly laid. The simplest thing that can safely be said is that there are genuinely troubling issues left unaddressed by the undergraduate calculus sequence, and they must be dealt with before moving on.

It is also important to note at this point that the demands on students become qualitatively different in this course than in its prerequisites. Learning strategies which have succeeded in previous classes will not necessarily suffice at this level. If at some point these challenges or frustrations 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.

REAL ANALYSIS 1 MWF 10:00-10:50AM FALL 2012 STUART 309

Tentative Schedule

Monday, August 27th §1.7 Real Numbers	Wednesday, August 29th §1.8 Properties of Real Numbers	Friday, August 31st §1.9 Review
Monday, September 3th No Class – Labor Day	Wednesday, September 5th §2.1 Convergence	Friday, September 7th §2.2 Limit Theorems
Monday, September 10th §2.3 Infinite	Wednesday, September 12th §2.4 Monotone Sequences	Friday, September 14th §2.5 Cauchy Sequences
Monday, September 17th §2.5 Cauchy Sequences	Wednesday, September 19th §2.6 Subsequences	Friday, September 21st §2.7 Review
Monday, September 24th §3.1 Limit at Infinity	Wednesday, September 26th §3.2 Limit at a Real Number	Friday, September 28th §3.2 Limit at a Real Number
Monday, October 1st §3.3 One-Sided Limits	Wednesday, October 3rd §3.4 Review	Friday, October 5th **Exam 1**
Monday, October 8th §4.1 Continuity	Wednesday, October 10th §4.2 Discontinuity	Friday, October 12th §4.3 Properties of Continuous Functions
Monday, October 15th No Class – Fall Break	Wednesday, October 17th §4.3 Properties of Continuous Functions	Friday, October 19nd §4.4 Uniform Continuity
Monday, October 22nd §4.5 Review	Wednesday, October 24th §4.6 Compactness	Friday, October 26th §5.1 Derivatives
Monday, October 29th §5.2 Properties of Differentiable Func.	Wednesday, October 31st §5.3 Mean Value Theorems	Friday, November 2nd §5.4 Higher Derivatives
Monday, November 5th §5.5 L'Hôpital's Rules	Wednesday, November 7th §5.6 Review	Friday, November 9th **Exam 2**
Monday, November 12th §6.1 Riemann Integrals	Wednesday, November 14th §6.1 Riemann Integrals	Friday, November 16th §6.2 Integrable Functions
Monday, November 19th §6.2 Integrable Functions	Wednesday, November 21st No Class – Thanksgiving Break	Friday, November 23rd No Class – Thanksgiving Break
Monday, November 26th §6.3 Properties of Riemann Integrals	Wednesday, November 28th §6.4 Integration and Differentiation	Friday, November 30th §6.4 Integration and Differentiation
Monday, December 3rd §6.5 Improper Integrals	Wednesday, December 5th §6.7 Review	Friday, December 7th Dedekind Cuts
Monday, December 10th Final Review		
Final Exam – 8am on Friday, December 14th		

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.

REAL ANALYSIS 1 MWF 10:00-10:50AM FALL 2012 STUART 309

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 MIdwestern GrapH TheorY (MIGHTY) (Octoberber 21st-22nd) Iowa Section of the MAA (October 5th-6th)	5-15	2
Mathematics Competition Participation Iowa Mathematical Modeling Competition (October 25th-27th) Putnam Competition (December 1st)	10	2
Math Culture Reading Some weeks specific readings will be posted on the course web page Selected readings from Berlinski's *Tour* With approval, any relevant column on MAA.org With approval, any relevant article from *Math Horizons*, *CMJ*, etc.	5	 – 10 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.