

CALCULUS 2 2PM MTWF SPRING 2018 SH309

- Instructor: Jonathan White
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- Office: Stuart 316
- Office Hours: 9:30-9:50am and 11:00-11:30am MWF and by appointment
- Office Phone: 399-8280
- Home Phone: 362-3350 (between 7am and 10pm)
- Text: *Essential Calculus, Early Transcendentals, 2nd Edition*, James Stewart
- Daily Work: There will be several problem sets and quizzes during the semester, as well as online WeBWorK assignments. Combined these will be worth 250 points.
- Math Culture: Each student has the option of including Math Culture Points in their grade. A slate of Math Culture activities is available on page 3 of this syllabus. If included, this component will be worth 50 points.
- Exams: There will be four 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 $[92.0\%, +\infty) \rightarrow A$, $[90\%, 92\%) \rightarrow A-$, $[87\%, 90\%) \rightarrow B+$, $[82\%, 87\%) \rightarrow B$, $[80\%, 82\%) \rightarrow B-$, $[77\%, 80\%) \rightarrow C+$, $[72\%, 77\%) \rightarrow C$, $[70\%, 72\%) \rightarrow C-$, $[67\%, 70\%) \rightarrow D+$, $[62\%, 67\%) \rightarrow D$, $[60\%, 62\%) \rightarrow D-$, $(-\infty, 60\%) \rightarrow F$ scale.
- Makeups: For fairness to those who follow the schedule, makeups for exams will be allowed only in extenuating circumstances, with documentation and advance notice when humanly possible. Late problem sets will be penalized 20% of points possible for each day late, and only accepted until others are returned.

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 continues topics introduced in Calculus 1, but with greater depth and sophistication. Ideas get bigger, and problems 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 a computer-administered derivatives “gateway” exam. You may attempt this exam as often as desired, provided that you demonstrate understanding of previous mistakes. Success by 5pm Friday 1/19 will count as 10 points toward a student’s WeBWorK score, but after 5pm Friday 1/26 course grades will be lowered by 5% for each week or portion of a week without passing this exam.

The use of technology, particularly CoCalc, will be an important component of the course. Ability to compute with pencil and paper will also be important, as will conceptual understanding. This combination of demands 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

1/8 §4.7 Antiderivatives	1/9 §5.4 The FTC	1/10 §5.5 u -substitution	1/12 §5.5 u -substitution
1/15 No Class – MLK Day	1/16 §6.1 Integration by Parts	1/17 §6.2 Trig Integrals	1/19 §6.2 Trig Substitution
1/22 §6.3 Partial Fractions	1/23 §6.4 Tables & Comp.	1/24 §6.5 Approximation	1/26 §6.6 Improper Integrals
1/29 §6.6 Improper Integrals	1/30 Review	1/31 Exam 1	2/2 §7.1 Area
2/5 §7.2 Volume by Discs	2/6 §7.2 Volume by Washers	2/7 §7.3 Voume by Shells	2/9 §7.4 Arc Length
2/12 §7.5 Surface Area	2/13 §7.6 Work	2/14 §7.6 Work	2/16 §7.6 Center of Mass
2/19 §7.7 Diff. Eq.	2/20 §8.1 Sequences	2/21 App. to Economics	2/23 App. to Economics
2/26 Probability	2/27 Probability	2/28 Review	3/2 Exam 2
No Class – Spring Break			
3/12 §8.2 Series	3/13 §8.3 Integral Test	3/14 §8.3 Comparison Test	3/16 §8.3 Limit Comparison
3/19 §8.4 A.S.T.	3/20 §8.4 Ratio Test	3/21 §8.5 Power Series	3/23 §8.6 Functions as Series
3/26 §8.7 Maclaurin & Taylor	3/27 §8.8 Applications	3/28 Review	3/30 Exam 3
4/2 §9.1 Parametric Func.	4/3 §9.2 Parametric Calc.	4/4 §9.2 Parametric Calc.	4/6 §9.2 Parametric Calc.
4/9 §9.3 Polar Coordinates	4/10 §9.4 Polar Calc.	4/11 §9.4 Polar Calc.	4/13 Conic Sections
4/16 Conic Sections	4/17 Conic Sections	4/18 Review	4/20 Exam 4
4/23 More Diff. Eq.	4/24 More Diff. Eq.	4/25 Final Review	
Final Exam – 2pm Tuesday 5/1			

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.

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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. Note that none of these are mandatory – there are far more opportunities than necessary to earn full credit. You should be able to select activities that are particularly relevant to you.

Activity	Points	Max #
Colloquium Attendance	5	
Colloquium Presentation	5-15	2
Meeting Attendance		2
Midwest Undergraduate Mathematics Symposium (4/6-7)	15	
Nebraska Conference for Undergraduate Women in Mathematics (1/26-28)	15	
SIGCSE Technical Symposium (?)	15	
University of Iowa Computing Conference (?)	15	
Hack-a-thon (?)	15	
Math Culture Reading		
Some weeks specific readings will be posted on Moodle	5	–
Articles from <i>Math Horizons</i>	5	3
With approval, articles from <i>Math. Magazine</i> , <i>The College Math. Journal</i> , etc.	5	3
Math Club Activities (when appropriate)	5-10	5
Winter Break Book Discussion, Movies, Pi Day Celebration, Workshops, etc.		
Other Appropriate Coe or Outreach Activities		
Contemporary Issues Forum (?)	5	–
Chess Club Meeting	5	4
Attending a Quantitative Research Symposium Presentation	5	3
Job Shadowing in any relevant field	10	1
Working with students at McKinley Middle School, etc. (see Jon)	5	5

You should plan to spread your participation through the semester. In each case, 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 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.