

# Calculus 2 MTWF 10AM Spring 2022 SH 309

- Instructor: Jonathan White, [jwhite@coe.edu](mailto:jwhite@coe.edu)
- Chair: Gavin Cross, [gcross@coe.edu](mailto:gcross@coe.edu)
- Web Page: [public.coe.edu/~jwhite](http://public.coe.edu/~jwhite)
- Office: Stuart 311
- Office Hours: (Zoom link on web page) 9-9:30am M-F, 10-10:50am Th, and by appointment
- Office Phone: 319-399-8280
- Text: *Essential Calculus, Early Transcendentals, 2nd Edition*, James Stewart
- Daily Work: There will be several quizzes during the semester, as well as online WeBWorK assignments. Combined these will be worth 250 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 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  $[92.0\%, \infty) \mapsto A$ ,  $[90\%, 92\%) \mapsto A-$ ,  $[87\%, 90\%) \mapsto B+$ ,  $[82\%, 87\%) \mapsto B$ ,  $[80\%, 82\%) \mapsto B-$ ,  $[77\%, 80\%) \mapsto C+$ ,  $[72\%, 77\%) \mapsto C$ ,  $[70\%, 72\%) \mapsto C-$ ,  $[67\%, 70\%) \mapsto D+$ ,  $[62\%, 67\%) \mapsto D$ ,  $[60\%, 62\%) \mapsto D-$ ,  $(-\infty, 60\%) \mapsto F$  scale. Current grade information will be available online through Moodle at all times.
- 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 – 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.

To enter this class, you must pass a derivatives gateway exam. You may attempt this as often as desired, provided that you demonstrate understanding of previous mistakes. Success by 10pm Thursday 1/20 will count as 20 points toward your WeBWorK score, but after 10pm Thursday 1/27 course grades will be lowered by 50 points for each week or portion of a week without passing it. To exit this class successfully, you must pass a gateway exam over computing antiderivatives in order to earn a grade better than F in this course.

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.

Tentative Schedule

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

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 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	Max #
Colloquium Attendance	5	--
Colloquium Presentation	5-15	2
Conference Attendance Nebraska Conference for Undergraduate Women in Mathematics	5-15 15	2
Mathematics Competition Participation Iowa Collegiate Mathematics Competition	15	2
Math Culture Reading Specific readings will be posted, typically around 6 each semester Any article from Math Horizons With approval, any relevant article from Math Magazine, CMJ, etc.	5	-- 3 3
Math Club Activities (when appropriate) Movies, Math Club portion of the Playground of Science, Speakers, Workshops, etc.	5	--
Other Appropriate Coe or Outreach Activities Chess Club Meeting Job Shadowing in any relevant field Other Volunteer Outreach (Garfield, McKinley, etc. – talk to Jon for information!)	5 10 5	3 1 4

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 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.

# Learning Outcomes

By the end of this class each student should be able to demonstrate ability to:

- Evaluate integrals using the appropriate methods
- Model applications using integrals
- Analyze the behavior of a series using appropriate convergence tests
- Represent functions as power series
- Apply calculus concepts to solve problems using parametric curves and polar coordinates

The Provost has mandated that the material below this line appear on all syllabi:

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## Mission Statement:

Coe College is a national, residential liberal arts college offering a broad array of programs in the arts, sciences, and professions. Our mission is to prepare students for meaningful lives and fulfilling careers in a diverse, interconnected world. Coe's success will be judged by the success of our graduates.

## Academic Integrity

At Coe College, we expect academic integrity of all members of our community. Academic integrity assumes honesty about the nature of one's work in all situations. Such honesty is at the heart of the educational enterprise and is a precondition for intellectual growth. Academic dishonesty is the willful attempt to misrepresent one's work, cheat, plagiarize, or impede other students' academic progress. Academic dishonesty interferes with the mission of the College and will be treated with the utmost seriousness as a violation of community standards. Please refer to the Coe College Academic Catalog for complete information regarding Academic Integrity: [www.coe.edu/academics/academic-resources/provosts-office/academic-integrity-policy](http://www.coe.edu/academics/academic-resources/provosts-office/academic-integrity-policy)

## FERPA

Students should be aware of their rights regarding the privacy of their educational records. Detailed information about your rights can be found under the FERPA (Family Educational Rights and Privacy Act of 1974) section in the Academic Catalog and online here: <https://www.coe.edu/academics/academic-resources/registrar/ferpa>. In line with FERPA restrictions, students should be aware that an instructor cannot publicly post grades by student name, institutional student identification number, or social security number without first having obtained students' written permission.

## The Definition of a Course Credit & Expected Workload

One course credit at Coe College constitutes 180 hours' worth of student work over the course of the term. "The Department of Education has defined one hour to be 50 minutes, so 150 60-minute hours is equivalent to 180 50-minute hours." This figure includes both the time spent in class and out of class completing course work. In other words, students are expected to devote a considerable amount of time outside of class to this course. For courses that meet in a standard MWF or T-Th slot, students should be expected to work seven hours a week outside of the three hours in class.

## Requesting Academic Accommodations

Coe College is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning in this course, please visit my office hours to discuss these concerns with me. If you have a medical, physical, psychological, or learning need documented by a healthcare provider, or experience an unforeseen obstacle during the semester, you can make an appointment with Laura Hayes, Accessibility Services Coordinator, to request an official accommodation under the Americans with Disabilities Act. You can find more information about the Accessibility Services Office by visiting the Learning Commons website or by emailing [accessibility@coe.edu](mailto:accessibility@coe.edu). If you have already been approved for accommodations through Accessibility Services, please meet with me so we can develop a plan for your success together.

## Reporting of Sexual Assault or Misconduct

As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as a faculty member. It is my goal that you feel able to share information related to your life experiences in classroom discussions, in your written work, and in any one-on-one meetings. I will keep the information you share with me private to the greatest extent possible. However, I am required to share information regarding sexual misconduct or students who may be in danger to themselves or to others. Students may speak to someone confidentially by contacting Student Life at 319-399-8843 or emailing [titleix@coe.edu](mailto:titleix@coe.edu), Safety, and Security at 319-399-8888, Emily Barnard (college counselor) at 319-399-8843, or visit Coe's Title IX website for more information.