MATH 1634: Calculus 1: Section 03
Spring 2015 Semester (Final Draft)

Instructor: Brian Brodsky                Office: Boyd 106 C
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Class Meetings: MWF: 8am – 8:52am: Boyd 304
Office Hours: Tuesday 7am – 12pm and 1pm – 2pm. Thursday 7am – 8am, 9am – 11am and 1pm – 2pm.

Hours Credit: 4 hours

Prerequisites: MATH 1112 or MATH 1113 or equivalent

Course Description: The first of a three-course sequence in calculus. Limits, applications of derivatives to problems in geometry and the sciences (physical and behavioral). Problems which lead to antiderivatives.


Dominant Discourse Learning Outcomes:

1. The student will be able to compute limits.
2. The student will be able to compute derivatives of polynomial, rational, exponential, logarithmic, and trigonometric functions.
3. The student will be able to apply calculus to related rate, maximum-minimum, and curve sketching problems.
4. The student will understand the definition of the indefinite and definite integral.
5. The student will understand and be able to apply the Fundamental Theorem of Calculus.
6. The student will be able to compute definite integrals using the techniques of integration by inspection and integration by substitution.

Critical and Metacognitive Learning Outcomes:

1. Learners will become empowered by taking charge of their own meaning making.
2. Learners will gain empowerment from knowledge and social relations that dignify one’s own history, language, and cultural traditions. During this process, students will be able to interrogate and selectively appropriate those aspects of the dominant culture that will provide them with the basis for defining and transforming, rather than merely serving, the wider social order (Giroux & McLaren, 1996).
3. Learners should be inspired to re-conceptualize different ways of knowing that rupture entrenched epistemologies and foster participatory spaces for the sharing and production of knowledge, and the mobilization of agency to effect changes in the world (Leistyna & Woodrum, 1996).
4. Learners will achieve academic success (both mathematical power and what is needed to pass gatekeeper tests and/or obtain access to advanced mathematical courses and related careers if desired), sociopolitical consciousness, a sense of social agency, positive cultural and social identities (Gutstein, 2007).
Student Centered Learning Outcomes:

1. Students want to develop skills to solve problems “on their own”.
2. Students want to develop “thinking skills” that will help them succeed in future mathematics classes.
3. Students want to investigate some of the ways calculus may be used in “real life”.
4. Students want to develop “critical thinking skills”.

Grade Composition:

- 50% from in-class exams
- 10% from concept map assignments
- 05% from in-class quizzes and assignments
- 10% from projects
- 25% from final exam
- Final Grade: 0 ≤ F < 60 ≤ D < 70 ≤ C < 80 ≤ B < 90 ≤ A

Exams: In addition to the final exam, there will be 4 in-class exams. Please see the attached course schedule for dates of the exams. Students may be able to reschedule exams if they have informed the instructor at least one class meeting prior to the exam of their situation. Students will not be allowed to make up missed exams.

Concept Map Assignments: Concept map assignments will be due throughout the semester and must be submitted into their assigned dropboxes in CourseDen. Please see the course calendar for the due dates of these assignments. Past due submissions will not be accepted for credit.

In-Class Quizzes and Assignments: Students must attend class the day of an in-class quiz or assignment in order to receive credit. Students will not be allowed to make up missed in-class quizzes or assignments.

Projects: Throughout the semester, we will engage in 2 projects. The purpose of these projects will be to investigate possible ways that we can use mathematics to help us understand and make meaning in the world, or read the world around us, in order to become critical agents in the world, or write the world around us. Please see the course calendar for details and due dates for these projects.

Topics of Projects:

1. The minimum wage vs cost of college tuition, what is the deal?
2. Disease

Final Exam: There will be no make-up Final Exam. Students needing accommodations for the final exam must notify the instructor at least one week prior to the scheduled exam date.

CourseDen: Course materials will be posted on CourseDen. Please check CourseDen often for updates. You may log in to CourseDen at www.westga.edu or http://webct.westga.edu. If you are having problems logging into CourseDen, please go to http://uwgonline.westga.edu/students.php or call 678-839-6248
Disabilities: Students with documented disabilities (through West Georgia’s Accessibility Services) will be given all reasonable accommodations. Students must take the responsibility to make their disability known and request academic adjustments or auxiliary aids. Adjustments needed in relation to test-taking must be brought to the instructor’s attention well in advance of the test (at least one week prior).

Academic Honesty: You are expected to achieve and maintain the highest standards of academic honesty and excellence as described in the Undergraduate Catalog. In short, be responsible and do your own work.

Classroom Conductor: Students are expected to be respectful and mindful of each other. Students disturbing or interfering with instruction will be asked to leave.

Mathematics Tutoring Center: The Mathematics Tutoring Center (MTC) is located in room 205 Boyd. The MTC is open Monday – Friday, and students may get assistance in any of their math courses. No appointments are needed for the MTC.

**MATH 1634: Spring 2015 Course Calendar**

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<th>Week of</th>
<th>Topics</th>
<th>Assignment</th>
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| Jan. 5 – Jan. 11 | (1) Introduction, syllabus, and what is a concept?  
(2) Tangent and velocity problems  
(3) Limit of a function  
(4) Limit laws | Quiz over syllabus due by class time of Jan. 12 |
| Jan. 12 – Jan. 18 | (1) Concept Maps  
(2) Precise defn. of Limit  
(3) Continuity  
(4) Limits at infinity | What is a limit? Concept map due by Jan. 18 at 11:59 pm. Submit to CourseDen dropbox. |
| Jan. 19 – Jan. 25 | (1) Investigating project 1  
(2) Derivatives as rates of change  
(3) Derivatives of a function | First response paper for project 1 due by class time of Jan 26 |
| Jan. 26 – Feb. 1 | (1) Paradigms of education  
(2) Review for exam 1  
(3) Exam 1  
(4) Derivatives of polynomials/exp. | What is the purpose of exams? Concept map due by Feb. 1 at 11:59 pm. Submit through CourseDen dropbox. |
| Feb. 2 – Feb. 8 | (1) Danger of a single story  
(2) Product and quotient rules  
(3) Derivatives of trig functions | Outline for project 1 due by class time of Feb. 9 |
| Feb. 9 – Feb. 15 | (1) Chain rule  
(2) Implicit differentiation  
(3) Perspectives on project 1 | What is a derivative? Concept map due by Feb. 15 at 11:59 pm. Submit through CourseDen dropbox. |
| Feb. 16 – Feb. 22 | (1) Derivatives of logs  
(2) Applications in science | |
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<th>Date Range</th>
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<th>Notes</th>
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| Feb. 23 – Mar. 1 | (1) Linear Approximation  
(2) Review for Exam 2  
(3) Exam 2  
(4) Min/Max | Final paper due for project 1 by class time of Mar. 2                  |
| Mar. 2 – Mar. 8  | (1) The mean value theorem  
(2) How derivatives shape graphs  
(3) Can we know truth?  
(4) Investigating project 2 | Are numbers real? Concept map due by Mar. 8 at 11:59 pm. Submit through CourseDen Dropbox. |
| Mar. 9 – Mar 15  | (1) Indeterminate forms  
(2) Curve sketching  
(3) Optimization | First response paper for project 2 due by class time of Mar. 23       |
| Mar. 16 – Mar. 22| Spring Break                                                           |                                                                      |
| Mar. 23 – Mar. 29| (1) Newton’s method  
(2) Antiderivatives  
(3) Review for Exam 3 |                                                                      |
| Mar. 30 – Apr. 5 | (1) Exam 3  
(2) Areas  
(3) Definite integrals  
(4) Fundamental Theorem of Calculus | Outline for project 2 due by class time of Apr. 6                     |
| Apr. 6 – Apr. 12 | (1) Indefinite integrals  
(2) Integration by substitution  
(3) Perspectives on project 2 | Final paper due for project 2 by class time of Apr. 13               |
| Apr. 13 – Apr. 19| (1) Review for exam 4  
(2) Exam 4  
(3) Review for final exam | Submit through CourseDen dropbox a brief answer to one or more of the following questions by 11:59 on Apr. 19 (your answer does not have to be longer than a paragraph, but it may be longer if you wish): During this course, have you learned anything about your learning? If so, what? Has you impression of mathematics changed during this course? If so, how? What has been your favorite element of this course? Least favorite? How has your college experience been so far? Is everything okay? |

The instructor reserves the right to make changes to this course schedule. It is the student’s responsibility to make note of these changes as announced in class.
Students, please carefully review the following information at this link http://www.westga.edu/assets/Dept/vpaa/Common_Language_for_Course_Syllabi.pdf. It contains important material pertaining to your rights and responsibilities in this class. Because these statements are updated as federal, state, university, and accreditation standards change, you should review the information each semester.

Important Dates

- Jan. 19: MLK No class
- Jan. 22: Exam 1
- Feb. 26: Exam 2
- Feb. 27: Last day to withdraw with grade of W
- Mar. 16 – Mar. 20: Spring Break
- Mar. 27: Mat'1 Day No mathematics classes
- Mar. 30: Exam 3
- Apr. 16: Exam 4
- Apr. 24, 8am – 10:30am: Final Exam

References


Gutstein, Eric (2007). "So one question leads to another": Using mathematics to develop a pedagogy of questioning. In Na'ilah S. Nasir and Paul Cobb (Eds.), Improving access to mathematics: Diversity and equity in the classroom (51-68), New York, New York: Teachers College Press