

## Mathematics 172

### CALCULUS II

Fall 2015

Section 01: MTW F 9:10 a.m.-10:00 a.m. MATH 305

Section 02: MTW F 11:10 a.m.-12:00 p.m. MATH 103

**Instructor:** Dan Johnston

**Office:** 012 Math

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**Office Hours:** Monday 1:00 pm - 3:00 pm and Thursday 9:00 am - 11:00 am

**Textbook:** *Calculus, Single Variable*, 6th edition, by Hughes-Hallett.

**Calculator:** Calculators are technically required for this course. Calculators can be a useful tool for mathematics, making computations less tedious and aiding in exploration of sound mathematical intuition. However we must be careful, many students rely too heavily on calculators which can hinder the development of reasoning, estimation, and mental mathematics skills. For these reasons, calculators will generally NOT be allowed on quizzes and exams.

#### Learning Outcomes:

1. Use the integral to find the area between two curves, volumes of revolution, work and the average value of a function;
2. Apply integration by direct and trigonometric substitution, parts, and partial fractions;
3. Calculate improper integrals and understand what it means for an integral to be improper;
4. Explain and apply parametrized curves in rectangular and polar coordinates, their derivatives, arc lengths and enclosed areas;
5. Use the integral to find arc length;
6. Explain and apply infinite sequences of real numbers, their monotonicity and boundedness, and the Monotonic Sequence Theorem;
7. Explain and apply convergent series of real numbers, geometric series, telescoping series, and the basic test for divergence;
8. Explain and apply the integral, comparison, limit comparison, and alternating series tests for series convergence;
9. Explain and apply absolute convergence and the ratio test;
10. Explain and apply power series, radius of convergence, and the integration and differentiation of power series;
11. Explain and apply Taylor series and Taylor polynomial approximation of functions.

**Homework:** Regular assignments will be made, but generally not collected. Homework Quizzes will be given covering this material. Each quiz will be announced in advance and will count 20 points. The lowest two quiz scores will not count. There are no makeups for quizzes.

**Exams:** There will be three 50 minute exams, each of which will be 100 points (for a total of 300 points). The final exam will be 100 points, but counted twice (for a total of 200 points on the final exam). So there are five exam scores, each of which will be 100 points. Only the best four scores will count. So there are four exams, for a total of 400 points. No make-up will be given for the exams.

The final exam is a comprehensive exam and is scheduled

**Wednesday, December 16, 6:00 pm-8:00 pm.**

**Do not miss the final exam.**

**Attendance:** You are expected to attend class regularly. **You are responsible for all the material presented and all announcements made on the days you are absent or you are late.**

**Accommodations:** The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

**Academic Honesty:** All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at [http://life.umt.edu/vpsa/policies/student\\_conduct.php](http://life.umt.edu/vpsa/policies/student_conduct.php).