MATH 180 SECTION 201 (TTh 8:00 a.m. – 9:30 a.m. in Math 100), Winter 2013

DIFFERENTIAL CALCULUS WITH PHYSICAL APPLICATIONS

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Text: *Calculus, Early Transcendentals, 7th edition* by James Stewart. This is the second year this edition is being used. You may be able to use an older edition instead, but homework problems will be assigned only from the 7th edition.

Grading Scheme: Final exam 50%; Midterms 17.5% each (35% total); WebAssign assignments 5%; Quizzes 5%; Workshops 5%

Midterm Dates: 50-minute midterms will be given in class on Tue. Feb. 5 and Tue. Mar. 12. The first midterm will be based on Weeks 1 to 4 inclusive in the course outline, and the second on Weeks 5 to 8.

Quizzes: In-class 15–20 minute quizzes will be given on the following dates: Jan. 15, Jan. 29, Feb. 12, Mar. 5, Mar. 19, Apr. 2. All of these dates are Tuesdays. Quizzes are worth 5% of your grade; your worst quiz score will be ignored. Calculators are not allowed on quizzes. Quizzes will be based on the material in the two WebAssign assignments due the preceding two Mondays and the corresponding suggested problems from the text.

Course Outline: A "Week" represents *approximately* 150 minutes of class time, not necessarily a calendar week.Unless otherwise indicated, the section numbers below refer to the textbook; most sections of Chapters 2 to 4 and two sections of the Course Notes are covered.

- **Week 1**
  - §2.1 The Tangent and Velocity Problems
  - §2.2 The Limit of a Function
  - §2.3 Calculating Limits Using the Limit Laws
- **Week 2**
  - §2.5 Continuity
  - §2.6 Limits at Infinity; Horizontal Asymptotes
- **Week 3**
  - §2.7 Derivatives and Rates of Change
  - §2.8 The Derivative as a Function
  - §3.1 Derivatives of Polynomials and Exponential Functions
- **Week 4**
  - §3.2 The Product and Quotient Rules
  - §3.3 Derivatives of Trigonometric Functions
  - §3.4 The Chain Rule
- **Week 5**

    - §1.6 Inverse Functions and Logarithms
    - §3.5 Implicit Differentiation
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- **Week 6**
    - §3.6 Derivatives of Logarithmic Functions
    - §3.7 Rates of Change in the Natural and Social Sciences
    - §3.8 Exponential Growth and Decay
- **Week 7**
    - §3.9 Related Rates
    - §3.10 Linear Approximations and Differentials
- **Week 8**
    - Course Notes §1 Taylor Polynomials
    - Course Notes §2 Taylor's Formula with Remainder
- **Week 9**
    - §4.1 Maximum and Minimum Values
    - §4.2 The Mean Value Theorem
- **Week 10**
    - §4.3 How Derivatives Affect the Shape of a Graph (First and Second Derivative Tests)
    - §4.4 Indeterminate Forms and l'Hospital's Rule
- **Week 11**
    - §4.4 Indeterminate Forms and l'Hospital's Rule (continued)
    - §4.5 Summary of Curve Sketching
    - §4.7 Optimization Problems
- **Week 12**
    - §4.7 Optimization Problems (continued)
    - §4.9 Antiderivatives

Resources: The resources below are available for getting help in the course, in addition to my office hours:

- **Supported Learning Groups (SLGs):** As part of MATH 180, SLGs will be held every week for the duration of the course. In SLGs, you will be provided with techniques to effectively learn the material covered in the course, as well as receive targeted support in areas you find particularly challenging. It is highly recommended that you attend SLGs in order to achieve success in this course. For every session you attend, you will get an entry into a prize draw for a $150 UBC Food Services gift card. Free snacks and coffee will also be provided. Math 180 SLG sessions are run weekly in IBLC room 195 on the following days: Wednesdays from 5.00-6.00 pm, Thursdays from 6.00-7.00 pm, Thursdays from 7.30-8.30 pm. Join whichever session best suits your schedule. Questions? Contact jumpstart.learning@ubc.ca.
- **Math Learning Centre**: Tutors are available, at no charge, to answer questions on a drop-in basis, starting the second week of classes and continuing through the final-exam period until the final exam. Times scheduled for MATH 100 and MATH 180 are available by clicking the link.

- **Math Exam Resources**: This wiki, produced by Math graduate students, provides hints, study tips, and solutions to past final exams, and also an opportunity to dialogue with other students and also Math graduate students through discussion pages.
- **Mathematics Department website:** There is much available under the Undergraduates tab, including recent final exams for most undergraduate mathematics courses.
- **AMS tutoring:** The UBC student society provides an assortment of tutoring services.

Course Policies:

- At least 2/3 of the questions on the midterm and final exams will be similar to homework problems.
- No calculators or electronic communication devices are allowed on the midterm or final exams.
- Self-prepared "cheat sheets" are not allowed on the midterm or final exams, and reference formula sheets will not be provided. However, relevant formulas may be given for particular problems, as part of the problem statement. A list of formulas you do not need to memorize is given here.

Missed Quizzes or Midterms: If a quiz is missed for a documented medical or other reason, it will be ignored, with other quizzes reweighted to compensate for the missed quiz. In the case of a missed midterm, permission to write a makeup midterm or reweighting of other course components may be granted in the following two circumstances: (a) prior notice of a valid conflict or absence on the scheduled date; or (b) notification to the instructor within 72 hours of absence due to medical condition. Original written documentation, for example a doctorâ€™s note or letter from a coach, is required in *all* cases; otherwise, a score of 0 will be assigned for the missed quiz or midterm.