Term 2, 2014/2015: Jan 5, 2015 -- Apr 10, 2015

Math 121:201 Honours Integral Calculus.

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Class: MonWedFri   14:00 -15:00 at Math building 105;   Tue 14:00-15:00 at Math building 104.
Office hours: tba at my office MATH 216.
First class: Monday, Jan 05, 2015   **Last class:** Friday, Apr 10, 2015

Course Webpage: http://www.math.ubc.ca/~yhkim/yhkim-home/teaching/Math121-2014/math121-2014.html

Important dates

- **Cr/D/F Grading Change Dates**

  Last day to change between Credit/D/Fail and percentage grading (grading options cannot be changed after this date): **January 19, 2015.**

- **Withdrawal Dates**

  Last day to withdraw without a W standing : **January 19, 2015**

  Last day to withdraw with a W standing (course cannot be dropped after this date) :   **February 13, 2015**

About the Course

- Math 121 in an honours version of Math 101, covering mostly the same topics but in greater foundational depth and with more emphasis on harder and/or theoretical exercises. Precise definitions and statements of theorems will be given. The final exam will have a significant overlap with the Math 101 exam. This will be used to normalize the final course grades in Math 121. The prerequisite for Math 121 is a grade of 68% in Math 120 or 80% in Math 100, 102, 104, 180 or 184

Main Text: *Calculus, 8th Edition, by Robert A. Adams and Christopher Essex. Pearson, 2013.*

Course Outline

- Integration (Ch. 5) (2 weeks):
- Techniques of Integration (Ch. 6: 6.1-6.3, 6.5-6.7) (2.5 weeks):
- Applications of Integration (Ch. 7: 7.1-7.6, 7.8-7.9) (2.5 weeks)
- Conics, Parametric Curves and Polar Curves (Sec. 8.2-8.6) (1.5 week)
- Sequences, Series and Power Series (Ch. 9: 9.1-9.7, 4.10) (3.5 weeks)
- Additional topics, review (1 week)

Course weekly schedule plan:

- [week 1. Sums, Areas, and Definite Integral 5.1-5.4]
- [week 2: Fundamental Theorem of Calculus, Method of Substitution, Areas 5.4-5.7]
- [week 3: Integration by Parts, Integral of Rational Functions 6.1-6.2]
- [week 4: Inverse Substitution, Improper Integrals, The Trapezoid and Midpoint Rules 6.3, 6.5-6.6]
- [week 5: Simpson's Rule, Volume by Slicing, Surface of revolution, 6.7, 7.1-7.2, Midterm I (Tue, Feb. 3)]
- [week 6: Arc Length, Surface Areas, Mass, Moments, Center of Mass 7.3-7.5]
- [week 7: spring break]
- [week 8: More Physical Applications, Application to Probability (Discrete and Continuous Random Variables) 7.6, 7.8]
- [week 9: First-Order Differential Equations, Parametric and Polar Curves (Arc Length, Area) 7.9, 8.2, 8.3, 8.4, 8.5, 8.6]
- [week 10: Parametric and Polar Curves (Arc Length, Area) 8.5, 8.6 Midterm II (Wed, March 11)]
- [week 11: Sequences and Infinite Series 9.1-9.2]
- [week 12: Convergence Tests, Absolute and Conditional Convergence 9.3-9.4]
- [week 13: Power Series, Taylor and Maclaurin Series 9.5-9.7, 4.10]
- [week 14: additional topics, review]

How to succeed in this course:

- It is very important to learn mathematics by "doing". For example, it is not enough to read a worked out example from a book or lecture notes. It is not enough to understand each step in the solution. You have to struggle to work out examples or problems by yourself, without looking at the solutions. This way, you have to build up mathematical intuition on the subject.

Exams:

- **Midterm 1**: **Tue, Feb. 3. in class. 45 min.**
- **Midterm 2:** **Wed, Mar. 11. in class. 45 min.**
- **Final Exam: TBA. 150min.   Topics: All course material, including midterm 1, midterm 2 and after midterm 2.**

Rules for exams:

- **No calculators or other notes will be allowed!**
- There are **no make-up** midterms but if you miss a midterm for a legitimate reason (e.g. illness), allowances can be made. **To claim legitimate emergency: Instructor must be notified within 48 hrs of missed test. Doctor's or other relevant person's notes must be present.**
- Students will be required to bring Photo ID to all tests and exams.
- To ask change of the marking of your exam, you have to follow a certain procedure. Namely, if you have any complaint on the marking, you first study the solution provided very carefully, and then give me a written note to explain in detail what was

wrong in the marking. I will handle only such written notes.
Such a note should be handed in as soon as possible.

Homework Assignments Policy: Careful work on the assignments is the best way to prepare for the midterms and the final exam.

- There will be webwork and written HW's. Written HW (WHW)'s are due mostly on Fridays **in Class.**
- Webwork HW's are due mostly on Wednesdays.
- Late homework is **not** accepted.
- Unreadable homework will get a zero mark.
- Work must be shown.
- Missed homework will count as a zero mark.
- The number of each homework problem should be clearly printed.
- **Written HW (WHW): There is a total of 9 written HW (WHW) assignments to be turned in, but only the best 8 will count towards your final grade.**
- It is probable that only a subset of those problems turned in would be graded, and you will not be informed (in advance) which ones these are. For example, if your homework does not contain any of the problems to be graded (which will be known only after the due date), you will get zero mark. So, it would be better for you to do all the problems to be handed in.
- For the selected problems, only some important steps and the final answer will be checked.
- To ask change of the marking of your WHW, you have to follow a certain procedure. Namely, if you have any complaint on the marking, you first study the solution provided very carefully, and then give me a written note to explain in detail what was wrong in the marking. I will handle only such written notes.
Such a note should be handed in as soon as possible.

Grading

Your grade for the course will be computed roughly as follows:
Homework: 16% (Written HW (WHW) 8% + Webwork 8%)
Midterms: 34% (17% + 17%)
Final Exam: 50%. 150 min exam.

Important Notes:

- **All marks are subject to scaling.**
- IT IS ESPECIALLY IMPORTANT that students know that IF THEY DO NOT FULFILL THE COURSE REQUIREMENTS DURING THE TERM (including not writing the midterm test(s) even if you agree to transfer the weight to the final) AND THEN MISS THE FINAL EXAMINATION, THEY MAY BE DEEMED INELIGIBLE FOR A DEFERRED FINAL.
- **The final exam will have a significant overlap with the Math 101 exam. This will be used to normalize the final course grades in Math 121**.