

## Quiz 1 Information

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MATH2069/2969: Discrete Mathematics and Graph Theory

Semester 1, 2011

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**Time:** 3.05–3.35pm, Thursday March 31, 2011

**Place:** Carslaw, 159

**Information:**

1. No books or materials are permitted, so all you need to take out from your bags is a pen, a calculator (if you want – you may not need it) and your student ID card. Answers written in pencil will not be marked.
2. There will be plenty of blank space and room on the quiz paper to do working, but only the answers (to be written in the boxes provided) will be marked.
3. The questions will be of the same kind as those in the practice classes. This includes questions asking you to repeat crucial principles or give definitions of key objects.
4. Numerical answers can be left unevaluated (as long as the expression is closed and short enough to fit in the answer box), e.g.  $\binom{4}{2}$  would be sufficient instead of 6.
5. The quiz is 30 minutes long. No-one may leave in the final 10 minutes.
6. At the conclusion of the quiz you will be asked to stop writing, and remain in your seats while your papers are collected.

**Material to be covered:** the content of Chapter 1 (Counting Problems) and Chapter 2 (Recursion and Induction) in the notes “Topics in Discrete Mathematics”. This was covered in the first ten lectures and Practice Classes 1–3 and the first page of Practice Class 4. In particular, you should revise the following concepts:

Fundamental counting principles, counting injective/surjective functions, ordered/unordered selections with repetition allowed or not allowed, binomial coefficients, multinomial coefficients, Inclusion/Exclusion Principle, Stirling numbers, recursive sequences, Fibonacci and Lucas sequences, Catalan numbers, mathematical induction, homogeneous linear recurrence relations, characteristic polynomial, nonhomogeneous linear recurrence relations, particular solution, general solution

Predominantly the quiz questions will be at the un-starred level of difficulty.