CLO for Combinatorial Analysis, Math A6800

Course Learning Outcomes
After taking this course, the student should be able to:

1. (a, e1, e2, f, g) Write clear and rigorous proofs of mathematical statements utilizing basic proof techniques, in particular proof by induction.
2. (e1, f, g) Understand basic counting techniques for the number of permutations and combinations (with or without repetitions) and be able to apply generating functions to counting problems.
3. (e1, e2, f, g) Understand basic concepts of graph theory and be able to prove standard theorems in elementary graph theory.
4. (a, g) Compute chromatic polynomials of graphs.
5. (a, b, c, d) Understand applications of Combinatorial Analysis to one or more of the following: optimization problems, matching problems, scheduling problems, linear programming.

Departmental Learning Outcomes The mathematics department, in its varied courses, aims to teach students to:

(a) perform numeric and symbolic computations

(b) construct and apply symbolic and graphical representations of functions

(c) model real-life problems mathematically

(d) use technology appropriately to analyze mathematical problems

(e) state (e1) and apply (e2) mathematical definitions and theorems

(f) prove fundamental theorems

(g) construct and present (generally in writing, but, occasionally, orally) a rigorous mathematical argument.