

Robust Graph Colorings

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The problem introduced in this paper arises from a naturally occurring situation in the construction of a course schedule. Typically graph coloring is employed to study such schedules with vertices representing courses, edges joining courses that should not be assigned the same time slot, and colors corresponding to the time slots. If the time assigned to a course must be changed, a revised schedule is required and should disrupt the original as little as possible. The approach considered here is to restrict changes to color assignments in the representative graph to the course whose time is being changed and its neighbors. This is always possible if a sufficient number of colors is available, and determining the smallest number of colors that allows such changes is the subject of this research.

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