A Tabu Search-Based Algorithm for Solving a Real-World University Timetabling Problem in Vietnam

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Abstract: Metaheuristic approaches, which include Tabu Search, are proved to be promised methods for solving educational timetabling problems. This paper introduces a Tabu Search-based algorithm that efficiently solves a high constraint real-world timetabling problem of a Vietnamese university, which involves assigning lectures with different length into appropriate periods, rooms and devices. The algorithm includes two phases: initialization phase and Tabu Search phase. The initial solution is generated using a greedy algorithm. Then, the solution obtained is improved by Tabu Search algorithm with two kinds of moves: single moves, which are applied in every step of searching process, and swap moves, which are only considered when the high weighted constraints are still violated. The computational results generally satisfy most important constraints and can be applied to practice.

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