

Sequential integer programming for solving curriculum-based university course timetabling problem

ABSTRACT

This research propose two stages sequential integer programming (IP) approach for solving curriculum-based university course timetabling problems (CB-UTT) in University Malaysia Sabah, Labuan international campus (UMLIC). Like other timetabling problems, CB-UTT in UMLIC has its own rules and features. The problem involves several hard constraints which need to be fully satisfied and soft constraints which satisfaction are very highly desirable. In this research mathematical formulation and two stages sequential IP search methodology based on UMLIC is proposed. The IP search methodology is tested over two real-world instances, semester 1, session 2016/2017 and semester 2, session 2016/2017. The objective of this research is to generate high quality feasible CB-UTT which satisfies all peoples affected by the timetable. The results show that, the IP formulation proposed in this research is able to produce feasible solution in the first stage, and further improve by 10.99% and 8.92% respectively by solving soft constraints in the second stage without violating any hard constraints solved in the first stage. This IP approach is applicable towards the CB-UTT in UMLIC.