

DESIGN & DEVELOPMENT OF SOFTWARE TO AUTOMATE  
THE ACTIVITY SCHEDULING SYSTEM IN  
THE FACULTY OF ENGINEERING TECHNOLOGY OF THE  
OPEN UNIVERSITY OF SRI LANKA

BY

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MASTER OF TECHNOLOGY IN INDUSTRIAL ENGINEERING

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**BY**

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## ABSRTACT

The scheduling of lectures, laboratory classes and other activities at universities and schools is an activity carried out often. Because of its importance, it has been studied intensively both theoretically and practically for a long time. Although it has been studied and various models developed, there is no solution for the complete timetabling problem. The complete timetabling problem concerns allocating courses into timeslots satisfying all the material resources available and satisfying needs and wants of lecturers and students. It is a very complicated unsolved problem in most cases with unsatisfactory results.

As in most of the academic institutions, the Faculty of Engineering Technology (FET) of the Open University of Sri Lanka (OUSL) schedules its timetable almost manually with a minor contribution of software, which helps just to arrange courses in time slots. In the existing system, all the clashes and conflicts to courses found out manually spending number of hours of staff from all the departments. With its large number of courses, most of the time the produced table consists of clashes between courses due to human mistakes.

The students of the OUSL depend on the activity schedule totally. Therefore, a correct and efficiently assigned timetable is important. Therefore, this study is carried out narrow down the complete time tabling problem to the timetable of Faculty of Engineering Technology of OUSL. A huge variety of timetabling models have been described in the Operations Research (OR) literature. They range from the weekly timetable of a school the scheduling of courses or exams in a university. Graphs and networks have proven to be useful in the formulation and solution of problems such as the activity scheduling problem in the FET, OUSL.

This model is developed using graph theory. The set of courses with no clashes found out using the graph colouring method. To apply this method to this problem an algorithm to find out the adjacency of course and an algorithm to colour the graph according to the adjacency is developed.

A mathematical model has been developed for assigning set of courses with no clashes into time slots considering the closeness of the levels of those assigned courses and available maximum number of classrooms.

The developed model is programmed and the software is written in Visual Basic source codes. The developed software saves the time spent by the staff members of each department. The department will have to list the courses according to the stream of specialization and the prerequisites of course if available. Then any operator will be able to produce the timetable within few minutes. It saves the time of academic members of staff and they will be able to perform a productive work for the department.