

**UNIVERSITI TEKNOLOGI MARA**

**TECHNICAL REPORT**

**NURSE SCHEDULING BASED ON INTEGER LINEAR  
PROGRAMMING MODEL**

**P02S19**

**FIFI SYAFIQA BINTI SAUPI (2017412784)**

**ASNADHIRAH BINTI MD AZIZ (2017412746)**

**AMIRAH NABILAH SEDEK BINTI ABU BAKAR SEDEK  
(2017412776)**

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## ABSTRACT

Schedule or roster for nurses is usually created by the nurse leader. Schedule is a series of duty's arrangement rotated among the staff. It shows the nurses' shift on the day so that all activities can be managed systematically and be performed as planned. There are several problems need to be catered when the schedule is created such as satisfaction of all the staff requirements and preferences. The schedule maker also needs to consider the shift fairness among staffs. The systematic nurse scheduling is important to ensure the quality of service to the patient, optimal resource utilization and high employee satisfaction. Hence, this research focuses on staff scheduling among nurses. There are two objectives of this research. The first objective is to analyse problems concerning injustice of staff nurse scheduling at an anonymous hospital. The secondary data was acquired at an emergency department at an anonymous hospital. All requirement and restriction placed by the hospitals for the nurse scheduling have been taken for the formulation of the model. The second objective of this project is to construct a better staff nurse scheduling by using Integer Linear Programming model. To create a pattern of schedule, we assign the penalty cost to each of the shift patterns and all the calculations were done to determine the differences between the highest and the lowest of penalty cost. In order to validate the schedule, we verify our result by comparing with the original schedule. Schedule that has the lower differences between the highest and the lowest of penalty cost is considered to be the better schedule compared to the other schedule. Hence, demonstrating the ability of the Integer Linear Programming model in creating a new staff nurse schedule and penalty cost structure being put forward. Thus, this project creates schedules that more efficient and highly preferred in order to help the nurse leader in creating the nurse schedule by follow all the hard and soft constraints.