بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

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قسم

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MONA MAGHRABY

OPTIMIZATION OF SURGICAL SUITE LAYOUT USING MIXED INTEGER PROGRAMMING

By

Fatma Ahmed Abd El-Hameed Mohamed Ibrahim

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Biomedical Engineering and Systems

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

OPTIMIZATION OF SURGICAL SUITE USING MIXED INTEGER PROGRAMMING

Key Words:
Facility Layout Optimization; Surgical Suite; Mixed Integer Programming.

Summary:

In this thesis, a multi-objective Mixed Integer Linear Programming (MILP) formulation is proposed to optimize the minimum interdepartmental traveling costs and the maximum closeness rating between spaces. The proposed model determines the location and orientation of each room inside the surgical suite with consideration of the international standards and is demonstrated using a commercial optimization software (CPLEX).

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Date: ../../…(it's the date that you handover the thesis)

Signature:

Dedication

This Thesis is dedicated to my family who never gave up on me and to the memory of my best friend, Yasmin who always inspired me with her true faith that made this journey possible.

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