

**Sudan University of Science and Technology**

**Biomedical Engineer Department**

**College of graduates**

**Design of Emergency and Trauma Hospital from a  
biomedical engineer perspective**

**تصميم مستشفى طوارئ و إصابات من منظور المهندس الطبي**

A thesis submitted in partial fulfillment of the requirements for  
the M.Sc Degree in biomedical engineering

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## آية

﴿يَرْفَعُ اللَّهُ الَّذِينَ ءَامَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ ۗ وَاللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ﴾ (١١)

صدق الله العظيم

المجادلة 11

## Dedication

*I dedicate this thesis to my loving*

*Father & mother*

*Whose endless love ,support ,prays day and night gave me  
strength to finish this work,*

*Along with my beloved sister and brothers for their support an  
encouragement.*

## Acknowledgement

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# Abstract

This project is Design of a hospital for emergency and trauma services in order to improve the healthcare services and to eliminate the emergency department deficiency .

The design depend on the interviews and visits held in different facilities were the data collected and analysed to build the appropriate design.

A plan has been drawn up to provide the hospital with all the required equipment in every single department as shown in the design model.The simulation program (ARCHICAD) was used to build the architectural and the 3D design.

The aim of this study is to improve the emergency services , reduce the overcrowding and the long waiting in emergency department and to provide healthcare services in area doesn't have hospital around.

## مستخلص

هذا المشروع عبارة عن تصميم مستشفى لخدمات الطوارئ والإصابات من أجل تحسين خدمات الرعاية الصحية والحد من القصور في قسم الطوارئ.

ويعتمد التصميم على المقابلات والزيارات التي أجريت في مرافق صحية مختلفة حيث تم جمع البيانات وتحليلها لتنفيذ التصميم المناسب.

تم وضع خطة لتجهيز مستشفى الطوارئ بالمعدات الأساسية المطلوبة لكل مرفق موضح في نموذج التصميم.

تم استخدام برنامج الأرشيكاد لتنفيذ التصميم المعماري والتصميم ثلاثي الأبعاد

والهدف من هذه الدراسة هو تحسين خدمات الطوارئ ، والحد من الاكتظاظ

والانتظار الطويل في قسم الطوارئ وتقديم خدمات الرعاية الصحية في

المنطقة التي لا يوجد خدمات رعاية صحية حولها.

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