



Sudan University of Science and Technology

Collage of Engineering

Department of Biomedical Engineering

A DESIGN OF STANDARD EMERGENCY COMPLEX

تصميم مجمع طوارئ نموذجي

**A project Submitted For Partial Fulfillment for Awarded
the Degree of M.Sc in Biomedical Engineering**

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بسم الله الرحمن الرحيم

قال تعالى:

إِنَّ فِي خَلْقِ السَّمَوَاتِ وَالْأَرْضِ وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ لَآيَاتٍ
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صدق الله العظيم

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Dedication

This work is dedicated with respect and love to my family.

To my mother and father's soul...

**To my husband for being with me caring, providing,
supporting and loving to achieve the best,**

To my best friend ...

Acknowledgment

I would like to express my deepest appreciation to all those who provided me the possibility to complete this research. I am thankful for their aspiring guidance, invaluable constructive criticism and friendly advice.

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Abstract

The emergency facility is a facility that provides medical services for patient with severe cases without prior reservation.

The main purpose of this work is to design and establish a hospital that is specialized in the emergency cases where the patient received and start diagnosis from the moment the patient arrived to the hospital until the moment when the case is stable and then transfer to general hospital, that never happening in our emergency departments of the general hospitals weather governmental or privet hospital.

The hospital designed based on international standards for building and designing emergency hospitals to be integrated work to serve and care of emergency and injuries patient, also, the three dimensional model for the emergency hospital was designed to illustrate dimensions and locations of all hospital departments.

When the design has been implemented on real world then the facility will be line with international standards of hospital design and construction.

المستخلص

مجمع الطوارئ هو عبارة عن مجمع يختص بتقديم الخدمات الطبية لمرضى الحالات الحرجة الذين يأتون دون حجز مسبق.

الهدف من هذا البحث هو تصميم و انشاء مجمع متخصص فى الحالات الحرجة , يتم فيه استقبال المريض وبدء تشخيص حالته منذ لحظة استلامه وحتى التأكد من استقرار حالته الصحية ومن ثم تحويله الى المستشفى العام وهذا ما لا يحدث عادة في اقسام الطوارئ الموجودة والتابعة للمستشفيات العمومية سواء كانت حكومية او خاصة.

تم التصميم اعتمادا على المقاييس العالمية لبناء وتصميم المستشفيات ليكون عملا متكاملًا لخدمة ورعاية مرضى الحالات الحرجة والإصابات , وتم اعداد نموذج ثلاثي الابعاد لتوضيح المساحات والمواقع لكل الاقسام التي يجب تواجدها بمجمع الطوارئ.

اذا تم تنفيذ التصميم على ارض الواقع يعتبر هذا المجمع مواكبا للمواصفات العالمية لبناء وتصميم المستشفيات.

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Abbreviation

B.B	Blood Bank
BME	Biomedical Engineering
CH.R	Changing room
CONT	Control
CPR	Cardiopulmonary Resuscitation
CT	Computerized Tomography
ED	Emergency Department
ERB	Ethical Review Board
ICP	Intracranial Pressure Monitor
ICT	Information and Communication Technology
ICU	Intensive Care Unit
MRI	Magnetic Resonance Imaging
OC	Operation council
PACU	Post-Anaesthetic Care Unit
RF	Radio frequency
SPSS	Statistical Package for Social Sciences
UPS	Uninterrupted Power Supply
UPS	Uninterrupted power supply
W.A	Waiting area
WC	Water cycle