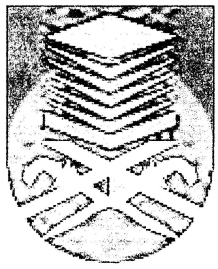

DESIGN AND STRUCTURAL ANALYSIS OF PRAYER CHAIR

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"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and it not concurrently submitted in candidature of any degree."

Signed : .....

Date : 24 MAY 2010

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ABSTRACT

The aim of this prayer chair's design is to offer a solution for muslims who have experiencing some physical disabilities or old aged to perform their solah. Changes in dietary habits and sedentary lifestyle of Malaysian resulting to increased prevalence of chronic diseases amongst the Malaysian further inspired to materialize with this idea. This research project will focus on designing a prayer chair using CATIA and analyzing its structural performance using finite element software, i.e. ANSYS. Data for initial design stage were obtained from previous studies on the anthropometry dimensions of older Malaysians. From here, selection of the data emphasized on the seat design requirements such as sitting shoulder height for seat back lateral support, buttock to popliteal length for thigh support and sitting hip breadth for cushion width. These data were then translated into prayer chair using CAD software, CATIA V5R18. Foldable concept was adopted in this prayer chair design in meeting easy handling and storing. The structural analyses were performed using ANSYS software to determine the deformation and Von Mises Stress. Analysis were done based on the simulated result obtained from the ANSYS software and compared against the minimum load requirement for this prayer chair design as benchmark in the previous studies done by other researchers. Finally design fine tuned is performed to fulfill minimum structural requirement and conclude the whole exercises.

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