

**Advances**  
**in**  
**Aircraft Structures**

**Editor**

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**IIUM Press**

Published by:  
IIUM Press  
International Islamic University Malaysia

First Edition, 2011  
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Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

ISBN: 978-967-418-148-2

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM  
(Malaysian Scholarly Publishing Council)

Printed by :

**IIUM PRINTING SDN. BHD.**

No. 1, Jalan Industri Batu Caves 1/3

Taman Perindustrian Batu Caves

Batu Caves Centre Point

68100 Batu Caves

Selangor Darul Ehsan

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# Chapter 1

## Design of IIUM Aircraft Fuselage Using Composite Material

Y. Aminanda, Mir Amirul Shah Bin Esa, Said Hamadi Said Mohamed

### Abstract

*The main objective of this chapter is to structurally design a minimum weight fuselage which has enough strength to overcome loads while flying or on ground. Structure is related not only to the safety but also to the cost and to the performance of an airplane. Due to these reasons, a proper steps need to be taken during the whole process. In this chapter a complete structural design calculation of the IIUM made aircraft's fuselage will be discussed. The design process discussed in this chapter is a standard practice applied in aircraft manufacturing industries. Step-by-step procedures are included whenever possible. The stress calculation and sizing of the structures is carried out using hand calculations throughout this chapter..*

*Keywords: Composite, fuselage, stress, design, optimum sizing*

### 1. Introduction

Fuselage is one of the important components of an airplane. Generally it is use to protect airplane payloads. Payloads here may include human, cargoes and aircraft system components. Since the applications of the fuselage are huge and significant, appropriate tasks are needed to build a fuselage. The requirement of this project is to structurally design a fuselage which has minimum weight. It