



**PRELIMINARY DESIGN OF 19 PASSENGERS MULTIPURPOSE  
AIRPLANE**

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**“MAY ALLAH S.W.T BLESS YOU ALL”**

## **ABSTRACT**

The objective of this project is to do preliminary design of 19 passengers multipurpose airplane. The airplane configuration consists of high wing, two turboprop engines, conventional tail and non-retractable tricycle landing gear. The airplane is designed according FAR 23 regulation. The aircraft operates at the rural to urban area. The analysis involves parametric sizing, undercarriage layout, weight and balance, stability in static longitudinal and flight performance. It is shown that the airplane is stable (static longitudinal) by having negative  $C_{m\alpha}$ . In the end, the design requirement and actual perform will be compared.

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# **CHAPTER I'**

## **INTRODUCTION**

### **1.0 General**

Airplane preliminary design is an effort to produce the airplane configuration and sizing based on the design requirement and objective. Preliminary design is an important part in the process of designing an aircraft. Preliminary design of an airplane consists of activities such as, parametric sizing, undercarriage layout, weight and balance, stability, flight performance. This project is concerned with the preliminary design of aircraft. It is desired to design 19 passengers' multipurpose aircraft, with tractor configuration, high wings, conventional tail and non-retractable tricycle landing gear. This aircraft missions is to operate at the domestic area in Sarawak.

### **1.1 Objective**

The main objective of this project is to do preliminary design of 19 passengers multipurpose airplane. Second is to understand the concepts of design criteria of an aircraft as required by FAR and a thorough understanding of the aircraft design.