

Over the past several years, considerable studies have been made to understand the mechanisms of failure of composite structures and the effect of these mechanisms on the performance of structures components made of composite materials. The compressive response of composite materials has received considerable attention due to their significance in the aerospace industry and the complexity associated with compressive failure. Failure criteria for anisotropic composite materials, which have different strengths in tension and compression, have attracted numerous researchers over decades and it is still today an important research topic. The goal of this study is to create a validated model to evaluate the effect of cutout shape, size, and the lamination angles of layers on the failure criteria of the fuselages. To achieve this objective, finite element method and statistical analysis have been used. The results show that the various analytical and empirical approaches have been used to study the failure capability of the fuselage structure. The model is applicable to the air transport industry. The proposed model has been validated against the known shape of an aircraft.