LAU
الجامعة اللبنانية الأميركية
Lebanese American University

Department of Industrial and Mechanical Engineering

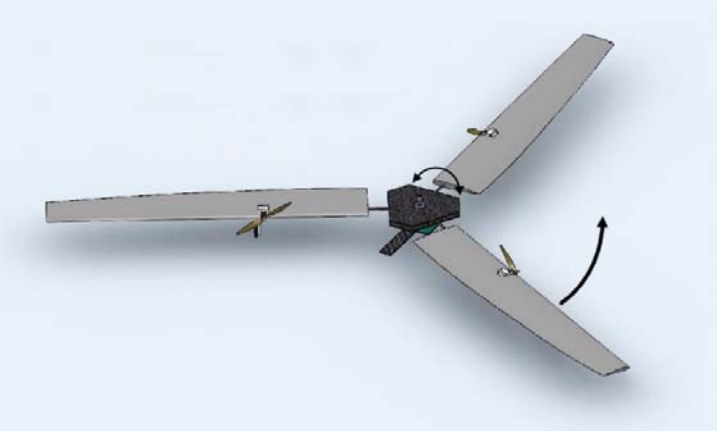
Project Description

Project Name: **Design of a new Unmanned Air Vehicle**

Team Size: **4 MEE Students**

Project Overview

The objective of this project is to design and construct a 3 to 4 bladed Unmanned Air Vehicle (UAV). The UAV is a new concept that maneuvers like the tricopter/quadcopter however, using a rotating wing to which an electric motor is mounted (see figure). This new design is expected to benefit from the know helicopter main rotor mechanism for control purposes.



The design of this new UAV will include: number of blades, airfoil cross-section, wing area and twist, power required, wing-motor integration (location), and payload.
To ensure a light and competitive weight, material selection accompanied by Fluid Structure Interaction (FSI) using numerical software to ascertain torsional and flexural rigidity will be carried out.
To assess the performance of the new concept, a comparison with other aerial vehicles based on weight per unit power ratio (kg/kw) will be performed.

Project Deliverables

- Report including design parameters and final layout, aerodynamic study, Fluid Structure Integration.
- Field test and a comparative study to other UAVs

Design Constraints

- Weight, size, power, and other safety related constraints will be developed during the first phase of this project.