**ASSIGNMENT-1**

* Considering the effect of forces and moments, write down the complete model of a Fixed Wing UAV describing its kinematics and dynamics for translational and rotational motion in the Inertial or Vehicle frame of reference.
* Develop the linearized longitudinal state space model and lateral state space model of a Fixed Wing UAV in MATLAB.
* Investigate the short period mode, phugoid mode, roll mode, spiral divergence model and Dutch roll modes. Find out the associated eigen values, natural frequencies, and damping ratios for all modes.
* Compare the obtained poles with those computed analytically for each of the reduced order models and summarize your findings.
* Simulate the response by exciting each mode individually. (\* Check help file to know how to excite each mode of a system individually). Summarize your findings.
* Develop lateral and longitudinal models of a fixed wing UAV based on transfer functions.

For the simulation:

* Parameters of UAV are provided
* Sample simulations for each case as guide has been provided.
* Help file of all equations are also provided.