Please provide the following information to be shared with on capstone information exchange platform:

1. Project number:
   S17-36

2. Project title (as will appear on the poster):
   Pitch controller for a Boeing aircraft

3. Team members:
   Yuxing Shi, Ian McKinnon, Xinmeng Lyu, Ze Liu, Pengyu Guo

4. Adviser(s) name(s):
   Zoran Gajic

5. Up to 10 keywords that will help to classify the project:
   Phase lead, phase lag, controller, control, system, feedback, analogy circuit, Simulink, aircraft, steady state error.

6. Project abstract (up to 200 words) to be shared with judges:
   We will be designing an autopilot control system that controls the pitch angle of a BOEING Aircraft. This design will include two parts: a simulation, and an electronic circuit board. The simulation will be conducted using MATLAB. We will build the block diagram using SIMULINK simulation software, finding the steady state error and the static gain factor K due to a unit ramp input. We will also design the optimal linear-quadratic controller using the unity penalty matrices in the performance criterion, and design a full order and observer blocks.

   We will then use this simulation to assist us in building the real circuit. We will purchase resistors, capacitors, and operational amplifiers, and design the board to use a minimal amount of each. We will do this for each of the simulation scenarios described above. We will then test each board and plot the results of all our signal tests.