**Chapter 8: Conclusions**

This project offered various opportunities for the professional development of students pursuing a career in engineering. One of these opportunities was to participate in a multidisciplinary team composed of electrical, mechanical, and computer engineers. As a result, the team acquired the ability to obtain the holistic view of a project and how the different disciplines are integrated to solve the different problems that emerge while executing the necessary tasks to comply with project requirements.

Another important aspect to this project was the fact that the sponsor, Honeywell required that NASA’s system engineering guide be used to demonstrate project progress. For this reason, the following presentations were developed: Preliminary Design Review, Critical Design Review, and Flight Readiness Review. These presentations demonstrated how the systems engineering process was applied throughout the project and are included in the appendix. On the other hand, going through the process of research and development as was required by NASA’s system engineering guide, the team also had the opportunity to broaden their knowledge concerning the application of engineering concepts in the design of a UAV and learn how to manage the unforeseen issues that may emerge during the design process. As a result, students learned the importance of developing a baseline to handle possible deviations in a project.

Through this project a quadcopter flight simulation was successfully executed through the implementation of MATLAB/Simulink and Mission Planner which facilitated the design of a UAV that has both remote and autonomous features. As a recommendation for future projects on UAV design, it is stated that the implementation of Simulink with Pixhawk requires further investigation. Precaution is advised when uploading firmware to telemetry modules since communication problems between the modules may occur if the wrong firmware is installed. Additionally, an alternative to UAV design concerning autonomy is presented by suggesting the use of the Ardupilot flight controller along with the Arduino IDE. From another point of view, participation in this project gave PUPR the opportunity to achieve a better understanding of the sponsor for future UAV design competitions that they may host. Finally, this project opened the doors to future projects related to the topic of UAV design by serving as a reference.