UNH SEDS is currently in the process of fulfilling a three-year plan to compete in the Spaceport America Cup competition located in Las Cruces, New Mexico in June 2020. The 2017-2018 school year was dedicated to developing a strong foundation of basic rocket mechanics. Using this knowledge, the members of the team this year were able to design, manufacture, and test a high-powered hybrid rocket engine. This engine will be passed on to the members of the club for the 2019-2020 school year to optimize and implement into a final rocket design for the competition. Since this team is working on its first ever design of a hybrid rocket engine, UNH SEDS has taken a “first principles” approach towards design. Once the fundamental mechanics of a hybrid rocket engine were understood, an engine was designed and manufactured for testing on a custom static test fire rig to obtain experimental thrust and combustion chamber temperature to optimize the engine’s performance. The team has also begun the design and manufacturing of a gimbal system which permits thrust vectoring providing controlled, in-flight stability. The trials and tribulations faced this year will be used in conjunction with basic rocket mechanics to design an award winning hybrid rocket for next years competition.