

The Path Of Success In Aeronautical Engineering

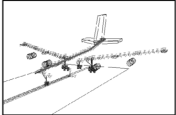
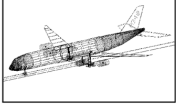

Written By: Lauren Gonzales, Isabella Ambriz, Melody Rios, Harlee Villalobos, and Edna Zubiarte

Team: 45009T, The Chicken Botz

Location: El Paso, Texas

Aeronautical Engineers are often referred to as the career of research and depiction . In this field of designers, they find ways to develop, and construct the different aircrafts that you may see in flight today. STEM (Science, Technology, Engineering, and Math) has played a huge role in this occupation. In STEM we use the Engineering Design Process in order to guide us towards finding solutions to any problem that may occur around the world.

In the Engineering Design Process, there are seven-steps in which professionals systematically use to approach a solution from the problems that have crossed in their careers. In VEX robotics we use the process in order to guide us through the problem solving to achieve success in the given game challenges. In this profession the engineers follow slightly the same process as robotics students today. The very first step is called "Problem Definition". In this stage of the procedures, the developer will have to follow through an expedient analysis of the predicament. This stage relates to VEX robotics, because in our teams we look for any reasonable and researchable ideas in order to overcome the challenge. The second step is "Conceptual Design". In this stage of the Aeronautical Engineers Process, they will do background research and brainstorm the key points and ideas needed in order to continue with their solution. In this profession's engineering process the third-step is "Preliminary Design". In this stage the occupation employers will start sketching their ideas with remembrance of durability and how well this idea can impact the aircrafts today. In VEX our team uses this method in order to compare and contrast the structures, and mechanics of what can be the most achievable and reliable to compete with. These steps show the engineers the different aspects of creativity as well as bring their mindsets into thinking of what is safe, sturdy, and reasonable to follow through and create a well structured aircraft for flight in Earth's atmosphere.

Aircraft Design	
Phase	Characteristics
 Conceptual Design	<ul style="list-style-type: none">• dynamic and fluid multidisciplinary design process• large number of design alternatives• guide and evaluate design requirements of the overall aircraft configuration• low level of detail• study of "global" or significant interactions• small, self-contained group of contributors
 Preliminary Design	<ul style="list-style-type: none">• major configuration fixed• occasional reshapes of the overall design• increasing level of detail and of understanding of the design• commencement of sub-system analysis and design by specialists• validation of the aircraft concept (predictions of the conceptual design phase)
 Detail Design	<ul style="list-style-type: none">• full-scale development by large number of monodisciplinary designers and analysts• ramified organisational structure• high level of detail (analysis and design)• high level of confidence required• regular checks of design goals• field test results (esp. of components) become available

In the aircraft design process, stage four is "Detailed Design" as well as stage five is "Flight testing". In these steps, the occupations designers will build a detailed and structured aircraft. When designing and putting together the airship, it comes with complex thinking and many components in which the aircraft is designed to be successful. When the design has been finished we will then start testing the durability and how resistible this product is. When in flight testing the prototype will go through violent experiments in order to see the stability and quality of how well this has been formed together. In VEX Robotics we use these steps in order to see how well our strategizing and problem solving have been put together to get an efficient outcome. In the process our team will look back on how well each mechanism will be incorporated together efficiently, similar to the aeronautical engineers process. The

sixth-step in the aircraft design process, the product will go under review and modifications will be made in order to improve the structure. Feedback is a crucial step in this part of the process in order to see what mistakes have been made and can be fixed for an efficient build. The last and final stage of the aircraft design process is step-seven, "Certification". In this step the engineers have now the chance to showcase their new solution to the public. The product in this step has been approved and all mechanisms are working and impactful to the cooperation of the design being efficient, and reliable.

-Picture from characteristics of aircraft design

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In the many different professions of STEM and robotics, aeronautical engineering has the beneficial impact of our team. Our team chose this occupation because these engineers follow the engineering design process thoroughly and efficiently to solve a problem. VEX Robotics has brought in a professional aspect of what STEM has to offer in many different career fields such as aeronautical engineers. This type of engineer can relate to robotics through the many different mechanisms being used and assembled together in order to achieve the obstacle successfully. Through this research and experience through VEX, our team feels prepared for the future careers in STEM to accomplish the said impossible and follow through the careers given with victory.



-Picture from Aircraft Design Process Overview

Citations:

Domun, Y. (2018, October 6). *Aircraft Design Process Overview*. EngineeringClicks. Retrieved January 16, 2022, from <https://www.engineeringclicks.com/aircraft-design-process/>

Hensel, S. (2019, April 3). *What is aeronautical engineering?* Southern New Hampshire University. Retrieved January 16, 2022, from <https://www.snhu.edu/about-us/newsroom/stem/what-is-aeronautical-engineering>

Spieck, M. (2003, November 12). *5 main characteristics of an aircraft design process ...* Retrieved January 17, 2022, from https://www.researchgate.net/publication/36421809_Ground_Dynamics_of_Flexible_Aircraft_in_Consideration_of_Aerodynamic_Effects