

Aerospace Engineering & Aviation Technology

@ Duval High School



Imagine, Create, Design

Aerospace Engineering & Aviation Technology @ *Duval High School*

What is the Aerospace & Engineering?

The Aerospace Engineering & Aviation Technology @ Duval High School is a rigorous, four-year program that provides highly specialized college preparatory courses. The program offers an innovative problem-based curriculum and real-world application of math, science and engineering. Students develop essential 21st century skills such as critical thinking, problem solving, communication and collaboration needed to be successful in today's world.

Admissions Requirements

Students seeking entrance into this program must take an admissions examination. The examination is a nationally normed multiple-choice achievement test consisting of two timed subtests: reading comprehension and mathematics problem solving. The following factors are used to determine eligibility

1. Earned grades
2. Standardized test of verbal skills
3. Standardized test of numerical ability

Applications

Applications for the Aerospace Engineering Academy will be available online only. Prince George's County Public School students will be able to apply via their Professional School Counselor. Non-PGCPS students will be able to download an application from the testing website: www.pgcps.org/~testing. Completed applications **MUST** be filled out by your child's current school and returned to the Testing Office with a sealed Official Transcript.

MAIL APPLICATION TO:

DEPARTMENT OF TESTING, ATTN: DONNA JENKINS
1616 OWENS ROAD, ROOM 12, OXON HILL, MD 20745

Examination Sites and Dates

Students that have taken the Science & Technology/Academy of Health Sciences entrance exam in December **DO NOT** need to retest, however they must submit an application. The admission examination for new testers will be administered March 2014.

Enrollment

Beginning August 2014, 100 rising 8th graders will be admitted into the Aerospace & Engineering Center @ Duval High School

Aerospace Engineering

Grade 9		Grade 10	Grade 11	Grade 12
English 9 Honors		English 10 Honors	English 11 Honors OR AP Language	English 12 OR AP Literature
US History Reconstruction to Present Honors		Local, State, and National Government Honors OR AP Government	World History Honors OR OR _AP World History	Social Studies Elective OR OR Dual Enrollment
Advanced Algebra Common Core or above		Geometry Common Core or above	Algebra 2/Trig or above	Pre-Calculus or above
Biology Honors		Chemistry Honors	Physics Honors or AP Physics B	AP Chemistry OR Dual Enrollment
World Language 1 or above		World Language 2 or above	Elective OR Dual Enrollment	
Physical Education	Health	Foundation of Technology	Elective OR Dual Enrollment	Elective OR Dual Enrollment
Fundamentals of Aerospace		Fine Arts	Engineering Communications	Aerospace Elective
Aviation History and Development	Meteorology	Aerospace Technology 1	Aerospace Technology 2	Aerospace Engineering Capstone

Aviation Operations Technology

Grade 9		Grade 10	Grade 11	Grade 12
English 9 Honors		English 10 Honors	English 11 Honors OR AP Language	English 12 OR AP Literature
US History Reconstruction to Present Honors		Local, State, and National Government Honors OR AP Government	World History Honors OR _AP World History	Social Studies Elective OR Dual Enrollment
Advanced Algebra Common Core or above		Geometry Common Core or above	Algebra 2/Trig or above	Pre-Calculus or above
Biology Honors		Chemistry Honors	Physics Honors or AP Physics B	AP Chemistry OR Dual Enrollment
World Language 1 or above		World Language 2 or above	Elective OR Dual Enrollment	
Physical Education	Health	Foundation of Technology	Elective OR Dual Enrollment	Elective OR Dual Enrollment
Fundamentals of Aerospace		Fine Arts	Engineering Communications	Aviation Elective
Aviation History and Development	Meteorology	Air Traffic Control Systems	ATC Operations 1	ATC Operations 2
				Aviation Management

Aerospace Engineering Course Descriptions

9th Grade - Aerospace Fundamentals 1.0 credit (*request Foundation of Technology credit from MSDE*)

Aerospace Fundamentals is a project-based Engineering course, focusing on Aerospace and Aeronautical topics. This course utilizes hands-on activities to reinforce students' grasp of STEM concepts critical to the understanding of the principles of engineering. This course will allow students to practice critical problem-solving skills through projects and investigations. The primary objective of this course is to provide students with adequate skill framework for success in the subsequent courses in

the Aerospace program. Topics will include: Engineering Principles & Problem Solving; Engineering Design & CAD; Aerospace Engineering; and Aeronautical Engineering.

10th Grade – Aerospace Technology I 1.0 credit

Aerospace Technology I is an exploration into flight, space travel, and supporting technologies.

Students will use a hands-on approach to study concepts including the history of aviation, aerodynamics, aircraft components, flight conditions, airport and flight operations, space, rocketry, and the aviation and space industries. The course is competency based and utilizes Design Processes and Software, 3D Printers, Wind Tunnels and Flight Simulators.

11th Grade – Aerospace Technology II 1.0 credit

Aerospace Technology II is an advanced exploration of flight, space travel, and supporting technologies. Students will use a hands-on approach to study concepts including aerospace activities; aircraft design, control, safety, and maintenance; airport infrastructure; rocket technology; space systems; and living and working in the aerospace environment. The course is competency based and utilizes Design Processes and Software, 3D Printers, Wind Tunnels and Flight Simulators.

Engineering Communication 1.0 credit

Engineering Communication prepares student to be able to effectively communicate in the engineering profession. Students will write various types of documents (e.g., letters, memos, executive summaries, problem analyses, proposals, progress reports), give oral presentations, and incorporate graphics in both their oral and written work. Students learn how to communicate specialized information to different audiences, work in teams, and address organizational and ethical issues. The course material is drawn primarily from professional contexts, principally engineering,

12th Grade – Aerospace Engineering Capstone 1.0 credit

This capstone course provides students with the opportunity to apply what they have learned through a long-term project of their choosing. Students have the option of working independently or as part of a design team. Students are paired with industry or university professionals who provide mentoring opportunities. Every project culminates with a formal written report and formal presentation.

Aviation Operations Course Descriptions

9th Grade - Aviation History and Development of Flight

History of Aviation and Development of Flight is an introductory course and customized textbook that focuses on the history of aviation and flight. It introduces students to how airplanes fly, how weather conditions affect on flight, flight and the human body, and flight navigation. The course is designed to complement materials taught in math, physics, and other science-related courses and is aligned with the National Science Education Standards, the Math Standards and Expectations, and ISTE National Educational Technology Standards for students.

9th Grade - Meteorology

This course explores how weather conditions affect flight. The course allows students to analyze Earth's atmosphere, atmospheric motion, cloud types and how they form, and how the atmospheric layers impact flight. Students examine air masses and fronts, high-and low pressure systems, and terrain factors that affect weather.

10th Grade – Air Traffic Control Systems

An introduction to aircraft systems, and operations. Students will learn about safety of flight, human factors, aeronautical chart interpretation, basic navigation, and introduction to air traffic control and airspace, and aviation weather factors, airplane performance, navigation, flight computers, and aeronautical decision making are covered.

11th Grade - ATC Operations 1

Preparation for the FAA ATC exam. Fundamental terminal operations utilizing simulated radar procedures and equipment. Includes control and separation of aircraft in the terminal area with emphasis on safe, expeditious flow of arriving and departing traffic. Use of high and low altitude en route charts and approach procedures.

11th Grade - ATC Operations II (prerequisite ATC Ops I)

Preparation for the FAA ATC exam: Non Radar air traffic control rules, regulations and procedures as used by the FAA. Students will apply non radar procedures to simulated traffic situations in the ATC laboratory. Includes ATC phraseology, aircraft recognition, tower positions, equipment, and responsibilities of controllers in the tower.

12th Grade - Aviation Management

Students will gain a holistic view of management requirements and techniques applicable to the aviation industry, problems, current issues and future trends related to aviation operations. Includes management and organizational styles as applied by the aviation industry and examine emerging FAA policy that impacts the National Airspace System.