Maryland CTE Programs of Study

Aeronautics, Aviation, Aerospace Science and Technology III (2025)

GENERAL REQUIREMENTS This course is recommended for students in Grades 11-12. 1

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INTRODUCTION 2

A Career and Technical Education (CTE) instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions. 2.A

B The Supply Chain and Transportation Career Cluster focuses on preparing students for foundational careers in aeronautics, aviation, aerospace science, and related industries. This cluster emphasizes the essential skills needed for careers in air transportation, aerospace engineering, aviation management, and logistics. Professionals in this field operate in diverse settings, including airports, aerospace manufacturing plants, and research facilities.ms. 2.B

C The Aeronautics, Aviation, Aerospace Science, and Technology Program of Study (POS) offers students foundational knowledge in aviation systems, flight principles, and aerospace technology. Students will gain hands-on experience through structured coursework and practical applications, enabling them to explore the essential functions of aviation and aerospace careers. 2.C

D Aeronautics, Aviation, Aerospace Science, and Technology II introduces students to foundational topics such as the history of aviation, fundamentals of flight, aerospace engineering principles, and ethical responsibilities in the industry. This course lays the groundwork for understanding the critical role of aviation and aerospace in global transportation and exploration. 2.D

E Students will participate in at least two Career-Connected Education and Work-Based Learning experiences in this course, such as attending guest lectures, airport tours, or visits to aerospace manufacturing facilities. 2.E

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tudents are encouraged to participate in extended learning experiences through ligned Career and Technical Student Organizations (CTSOs). CTSOs are a

cocurricular requirement in the Carl D. Perkins Act, and alignment to CTSO activities is an expectation for CTE programs in the state of Maryland. 2.F

KNOWLEDGE AND SKILLS 3

A The student demonstrates skills in aviation and aerospace operations. The student is expected to: 3.A

1. Analyze flight dynamics and interpret meteorological data for safe flight operations. 3.A.1
2. Perform advanced navigation tasks, including GPS and flight planning. 3.A.2
3. Operate unmanned aircraft systems (UAS) in simulated and real-world scenarios. 3.A.3
4. Demonstrate knowledge of propulsion systems, aircraft maintenance, and troubleshooting procedures. 3.A.4

B The student develops advanced career readiness skills in aviation and aerospace. The student is expected to: 3.B

1. Develop a career plan that includes necessary education, certifications, job skills, and experience for specific roles in aviation and aerospace (e.g., commercial pilot, aeronautical engineer). 3.B.1
2. Create a professional resume and portfolio that reflect skills, projects, certifications, and recommendations. 3.B.2
3. Demonstrate effective interview skills for roles in aviation and aerospace. 3.B.3

C The student develops technology and digital literacy skills. The student is expected to: 3.C

1. Use technology as a tool for flight simulation, navigation, and data analysis. 3.C.1
2. Apply digital tools for creating and managing technical reports, flight logs, and project presentations. 3.C.2
3. Demonstrate proficiency in using industry-standard aviation software, including flight simulation platforms and GIS mapping tools. 3.C.3
4. Adhere to ethical and legal considerations for technology use, including FAA regulations and secure data management. 3.C.4

D The student integrates core academic skills into practices. The student is expected to: 3.D

1. Demonstrate the use of clear communication techniques, both written and verbal, that are consistent with industry standards. 3.D.1
2. Apply English concepts such as writing technical manuals, creating flight plans, and documenting project objectives. 3.D.2
3. Apply scientific principles, including aerodynamics, weather systems, and propulsion physics, to understand and solve aerospace challenges. 3.D.3

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4 Recognize the roles and responsibilities of government agencies, aviation regulations, and public policies that impact aviation and aerospace. This includes knowledge of laws, ethical considerations, and regulatory compliance in the field. 3.D.4

5 Utilize mathematical skills, including navigation calculations, weight and balance analysis, and aircraft performance evaluations. 3.D.5

E The student participates in extended learning opportunities to enhance career readiness. The student is expected to: 3.E

1 Engage in apprenticeships with local aviation, aerospace, or transportation organizations to gain hands-on experience in industry practices. 3.E.1

2 Participate in internships with aviation or aerospace companies, focusing on areas such as maintenance, operations, or engineering. 3.E.2

3 Collaborate with aviation and aerospace professionals to gain firsthand insights into industry standards, technologies, and career pathway. 3.E.3

F The student prepares for a work-based learning experience by demonstrating professional skills. The student is expected to: 3.F

1 Develop a professional resume, portfolio, or skills showcase highlighting technical competencies and industry-aligned projects. 3.F.1

2 Review and prepare for FAA certifications, including the Part 107 Remote Pilot Certification. 3.F.2

3 Practice interview skills and demonstrate knowledge of workplace expectations in aviation and aerospace settings. 3.F.3

4 Set career-related goals for a work-based learning experience, identifying specific skills to develop and refine for future roles in aviation and aerospace. 3.F.4

G The student develops physical and mental resilience for aviation and aerospace careers. The student is expected to: 3.G

1 Understand strategies for managing stress and preventing fatigue in high-stress and time- critical aviation environments. 3.G.1

2 Practice mindfulness and coping techniques to enhance focus, situational awareness, and emotional regulation during flight operations, maintenance tasks, and emergency scenarios. 3.G.2