Maryland CTE Programs of Study

Introduction to Aeronautics, Aviation, Aerospace Science and Technology I (2025)

GENERAL REQUIREMENTS This course is recommended for students in Grades 9-10. 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 Introduction to Aeronautics, Aviation, Aerospace Science, and Technology I 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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F **Students are encouraged to participate in extended learning experiences through aligned 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 (e.g., SkillsUSA Aviation Maintenance).** 2.F

KNOWLEDGE AND SKILLS 3

A **The student demonstrates the necessary skills for career development, maintenance of employability, and successful completion of course outcomes. The student is expected to:** 3.A

1. Identify and demonstrate positive work behaviors that enhance employability, including punctuality, professional appearance, and adherence to protocols. 3.A.1
2. Exhibit effective communication and active listening skills when collaborating in aviation and aerospace projects or responding to industry-specific scenarios. 3.A.2
3. Solve problems using critical thinking and decision-making skills, particularly during time- sensitive or high-pressure situations in aviation or aerospace operations. 3.A.3
4. Demonstrate leadership and teamwork skills through group activities, project based learning, and focused exercises. 3.A.4
5. Demonstrate an understanding of ethical and legal responsibilities in emergency response professions. 3.A.5

B **The student identifies various career pathways. The student is expected to:** 3.B

1. Design a career plan includes a clear pathway for advancement within supply chain and transportation services within Aeronautics, Aviation, Aerospace Science and Technology, highlighting continuous education and specialization opportunities. 3.B.1
2. Develop a career plan that includes necessary education, certifications, job skills, and experience for roles in aviation and aerospace (e.g., Commercial Pilot, Aerospace Engineer, or Air Traffic Controller). 3.B.2
3. Demonstrate effective interview skills for roles in aviation and aerospace, with a focus on entry-level positions. 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

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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 in aviation and aerospace operations. 3.D.1
2. Apply English concepts such as writing technical reports, creating flight plans, and documenting design processes and project goals. 3.D.2
3. Apply scientific principles relevant to aviation and aerospace, including aerodynamics, propulsion systems, and principles of physics in flight dynamics and navigation. 3.D.3
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 measurement, ratios, and data interpretation, for navigation calculations, weight distribution, and aircraft performance analysis. 3.D.5

E **The student demonstrates knowledge and skills for ensuring safety in aviation and aerospace scenarios. The student is expected to:** 3.E

1. Understand and implement safety protocols to minimize risks during flight operations – including in classroom-based or approved simulation environments, maintenance, and ground handling. 3.E.1
2. Demonstrate knowledge of appropriate selection and personal protective equipment (PPE) and its proper use in aviation and aerospace environments. 3.E.2
3. Recognize the importance of mental and physical fitness for roles in aviation and aerospace, emphasizing the ability to handle high-pressure and safety-critical situations effectively. 3.E.3

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

1. Understand strategies for managing stress and preventing fatigue in high-stress and time- critical aviation environments. 3.F.1
2. Practice mindfulness and coping techniques to enhance focus, situational awareness, and emotional regulation during flight operations, maintenance tasks, and emergency scenarios. 3.F.2