Atherton State High School
On Eagles' Wings

Senior Aerospace Systems (General)
Learning and Assessment Overview 2020

Year 11		Year 12	
AES Unit 1 **Introduction to aerospace systems and structures**	**AES Unit 2** **Emerging aerospace technologies**	**AES Unit 3** **Aerospace operational systems**	**AES Unit 4** **Aircraft performance systems and human factors**
In Unit 1, students are introduced to the technology, concepts and principles associated with the aerospace industry. They learn about the global, national and local importance of the industry. They investigate the industry's historical development and consider the challenges associated with meeting the transportation needs and expectations of future societies. They explore problems associated with the increasing global demand for safe and efficient aircraft, pilots, support staff, maintenance staff and ground and airspace support systems. Students gain a basic understanding of aerodynamics and aircraft flight systems, concepts and principles such as lift, weight and drag, instability, high- and low-speed flight control, piston and gas turbine engines, electrical supply, control force and fuel delivery and an understanding of the potential impacts of weather conditions on various aerospace operations and the systems used to mitigate disruption. Students learn about and use systems thinking habits and systems thinking strategies, such as visual frameworks, causal loops and feedback loops to recognise and classify the interrelationships that exist within and between various aerospace systems.	Unit 2 includes learning experiences beyond traditional aircraft to build on students' technology knowledge of contemporary aerospace. These emerging technologies include satellites, space vehicles and remotely piloted aircraft systems (RPAS) and are finding innovative 21st century applications, for example, ways in which aerospace-related technologies can be used to solve problems for people and communities in need. Students develop their knowledge and understanding of the applications of these future-focused and sometimes non-traditional aerospace technologies (or assets) and operations (asset deployment) to solve problems through use of systems thinking habits and systems thinking strategies. In this unit, students engage with real-world problems to develop innovative future-focused solutions.	In Unit 3, students will study the operational systems used in the commercially competitive air transportation industry. The unit topics provide a focus for student learning, and problem-solving engages students in the development of practical solutions to actual, possible or probable operational problems. Students use systems thinking habits and systems thinking strategies, including visual frameworks and causal loop diagrams to explore and document the relationships between and within aerospace operational systems. Real-world situations, case studies and simulations are used to support student learning. Learning in this unit equips students with an appreciation for the role that aerospace operational systems and their interconnectivity play in promoting public confidence in a highly competitive and safety-conscious industry.	issues that impact on their operation in aerospace contexts. Unit topics provide an instructional focus for problem-solving experiences that promote students' understanding of the necessity for continual development of aircraft systems technologies. Students use systems thinking habits and systems thinking strategies to explore aircraft operational systems in order to solve actual, possible or probable problems. Through their study of this unit, students develop an understanding of the interdependencies that exist between and within the various systems that function to maintain the safe and efficient operation of innovative contemporary aircraft. Learning in this unit equips students with an appreciation for the role that applied aerospace technologies play in the promotion of public confidence in a highly competitive and safety-conscious industry.
Topics	**Topics**	**Topics**	**Topics**
1. Solving aerospace problems 2. The evolving aerospace industry 3. Introduction to aerodynamics 4. Introduction to aircraft systems 5. Introduction to aviation weather systems	1. Operational assets 2. Operational environments 3. Operational control systems 4. Future applications	1. International and national operational and safety systems 2. Airspace management 3. Safety management systems 4. Operational accident and incident investigation processes 5. Airport airline operation systems	1. Aircraft performance 2. Aircraft navigation 3. Advanced navigation and radio communication technologies 4. Human performance and limitations
Unit Duration	**Unit Duration**	**Unit Duration**	**Unit Duration**
Yr 11 Weeks 1 - 16 (16 weeks)	Yr 11 Weeks 17 - 32 (16 weeks)	Yr 11 Weeks 33-38, Year 12 Weeks 1 - 10 (16 weeks)	Yr 12 Weeks 11-26, Revision 27-33, External Exam Weeks 34-37 (22 weeks)
Assessment Task/s	**Assessment Task/s**	**Assessment Task/s**	**Assessment Task/s**
FIA1 **Project - folio** *Weighting:* 25% *Conditions:* 5 weeks, Part A: 7–9 single-sided A3 pages or equivalent digital media Part B: 2–3 single-sided A4 pages or equivalent digital media *Issued:* Week 4 *Due:* Week 8	**FIA2** **Examination** *Weighting:* 25% *Conditions:* 120 mins + 5 mins perusal short response items, 800-1000 words in total *Issued:* n/a *Due:* Week 16	**FIA3** **Project - folio** *Weighting:* 25% *Conditions:* 6 weeks, Part A: 7–9 single-sided A3 pages or equivalent digital media Part B: 2–3 single-sided A4 pages or equivalent digital media *Issued:* Week 19 *Due:* Week 24	**FIA4** **Examination** *Weighting:* 25% *Conditions:* 120 mins + 5 mins perusal short response items, 800-1000 words in total *Issued:* n/a *Due:* Week 34	**IA1** **Project - folio** *Weighting:* 25% *Conditions:* 5 weeks, Part A: 7–9 single-sided A3 pages or equivalent digital media Part B: 2–3 single-sided A4 pages or equivalent digital media *Issued:* Week 5 *Due:* Week 8	**IA2** **Examination** *Weighting:* 25% *Conditions:* 120 mins + 5 mins perusal short response items, 800-1000 words in total *Issued:* n/a *Due:* Week 16	**IA3** **Project - folio** *Weighting:* 25% *Conditions:* 6 weeks, Part A: 7–9 single-sided A3 pages or equivalent digital media Part B: 2–3 single-sided A4 pages or equivalent digital media *Issued:* n/a *Due:* Week 24	**EA4** **External Examination** *Weighting:* 25% *Conditions:* 120 mins + 5 mins perusal short response items, 800-1000 words in total *Issued:* n/a *Due:* Week 34