Flight & Space

Syllabus

Journey Middle School
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Course Description	The exciting world of aerospace comes alive through Flight and Space. Students explore the science behind aeronautics and use their knowledge to design, build, and test gliders, hot air balloons, model rockets and Mars Rovers. Custom built simulation software allows students to experience the move beyond a classroom's four walls. *https://www.alabamaachieves.org/wp-content/uploads/2021/03/Final-2020-STEM-COS.pdf*.
Course Digital Platforms	**Schoology Link:** https://madisoncity.schoology.com/home **Distribution List:** PowerSchool will be used for parent contact, including class updates and announcements. **Please ensure** with the JMS Front Office **that your preferred email address and/or phone number is in PowerSchool correctly.**
Textbook Information	There is a digital textbook for this course which is accessed via a login and password assigned to us from PLTW. We use Schoology as our lessons and activities organizer and PLTW as our curriculum resource. Please ensure your student brings their MCS Chromebook charged and ready for class each day, with their earbuds/headphones.
Course Prerequisites	None
Course Objectives	LO1.1 Persistently apply an iterative process to solve a problem or create an opportunity that can be justified; LO1.2 Solve a problem using computational thinking, analytical, and critical thinking skills; LO1.3 Analyze and describe design functionality by observation of an artifact; LO2.1 Design and conduct an experiment that investigates a question; LO3.1 Collaborate effectively on a diverse and multidisciplinary team; LO4.1 Communicate effectively for specific purposes and settings; LO5.1 Demonstrate the ability to manage multiple resources throughout a project; LO6.1 Explore a variety of careers related to engineering, biomedical sciences, and computer science; LO7.1 Demonstrate personal responsibility and initiative; LO8.1 Analyze the factors affecting flight; LO8.2 Represent data, and describe relationships and processes to make predictions and solve air traffic control problems; LO9.1 Identify potential reasons why people want to travel to space; LO9.2 Propose solutions to provide safe living conditions in space.

Course Goals	Students will: 1. Explore the variety of careers related to engineering, biomedical sciences, and computer science. 2. Communicate effectively for specific purposes and settings. 3. Collaborate effectively on a diverse and multidisciplinary team. 4. Demonstrate personal responsibility and initiative. 5. Persistently apply an iterative process to solve a problem or create an opportunity that can be justified. 6. Analyze the factors affecting flight. 7. Represent data, and describe relationships and processes to make predictions and solve air traffic control problems. 8. Identify potential reasons why people want to travel to space. 9. Propose solutions to provide safe living conditions in space.
Instructional Delivery Plan, Course Outline & Culminating Project	**Unit 1**: **Flight** The Science Of Flight, Use Aerodynamic Concepts To Explain How Aircraft Fly, Introduction To the Engineering Design Process, Investigate the Effect of Different Airfoils on Flight, Use Maps for Navigation, Explore Flight Crew Scheduling Criteria **End Project:** Aircraft Prototype, Create a Flight Plan Based on a Challenge Scenario. **Unit 2: Space** Investigate How Scientists and Engineers Play a Vital Role In Space Travel, Space Discovery, and Living In Space; Explore Launch, Orbit, Landing, Maintaining Health in Space, and Maintaining a Stable Living Environment for Astronauts **End Project:** Design, Build, and Test an Improved Prototype of a System of Student's Choice. **Unit 3: Destination: Mars** Work in teams to design and model different aspects required to complete a mission to Mars. Collaborate to complete problems and present findings. Plan the astronaut crew, rocket specifications, crew daily activity schedules, Mars landing site, and Mars landing vehicle. **Culminating Project:** Design and Build a Prototype of an Aircraft and Create a Flight Plan Based on an Assigned Challenge Scenario. Challenge Scenarios Relate To Crew Scheduling, Maintenance Problems, or Route Changes.
Credentialing	None
CTSO Integration ***(JMS Career & Technical Student Organization is TSA.)***	Technology Student Association, TSA, is a **career technical student organization** and a fundamental part of this course. It is a national career and technical student organization of students engaged in science, technology, engineering, and mathematics (STEM). TSA is integrated into the program which includes competitions and leadership opportunities. TSA provides students with activities during their class time and after school with our local TSA Chapter. *TSA Based Activities relevant to Flight & Space include but are not limited to*: *Lab Safety Posters, Career Prep, Essays on Technology, Challenging Tech Issues, CAD Foundations, Problem-Solving, Technical Design, and Flight.*
Embedded Numeracy Anchor Assignment (Flight Planning) 100 points	Students will fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation (L1.5). Students will write expressions that record operations with numbers and with letters standing for numbers (L1.2). Students use measurements and scales to create "astronaut pudding" and a menu for their astronaut based on their BMI (L2.4).

Embedded Literacy Anchor Assignment (Lesson Conclusion for Flight and Space Flight Planning) 100 points	Students will use precise language and domain-specific vocabulary to inform about or explain the topic (L1.1 - L2.7). Students will produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience (L1.1-1.3, L1.5-L3.1). Students will draw evidence from literary or informational texts to support analysis, reflection, and research (L1.1-L3.1).
Embedded Science Standards	Construct models and use simulations (e.g., diagrams of the relationship between Earth and manmade satellites, rocket launch, International Space Station, elliptical orbits, black holes, life cycles of stars, orbital periods of objects within the solar system, astronomical units and light years) to explain the role of gravity in affecting the motions of celestial bodies (e.g., planets, moons, comets, asteroids, meteors) within galaxies and the solar system.
CTE Lab Safety Guidelines	Each student in a CTE/PLTW course will be required to complete a lab safety exam and score a 100% correct before being allowed to use any tools on projects. We expect students to responsibly and safely use the CTE equipment. Examples of equipment used in CTE courses may include and are not limited to the following: scissors, hot glue guns, box cutters, power tools, hand tools, measuring tools, electronic equipment, computers, medical supplies, robotics equipment, food items (consumable and non-consumable), balloons.
Classroom Expectations	Classroom Rules and Procedures: 1. Be on time, on task and prepared to learn. 2. Respect the teacher, the classroom, other students, and yourself. 3. Be responsible for your own learning. 4. Clean up after yourself and your classmates. 5. Keep all personal electronics PUT AWAY.
Grading	**60%** = Assessments (Tests, Essays, Projects) **40%** = Daily Grades (Quizzes, Homework, Classwork, and Participation)
Make-up Work	Students with excused absences will be allowed to make-up all work within three days of returning to school. It is the student's responsibility to ask for make-up work. Students can get with a classmate or ask the teacher for help. Work that is not made up will become a zero (including quizzes/tests). Many times, missed quizzes and tests can be made up during school.
Late Work	Late work in CTE/STEM classes will not be accepted due to the brief nature of the classes. Students are expected to follow up with teachers upon return from an excused absence. Students present in class on the day of instruction are expected to turn in all in-class and out-of-class assignments on time.
Accommodations	Requests for accommodations for this course or any school event are welcomed from students and parents.
Materials and Supplies:	*Pencil* *Charged computer* *Fee: $10*

Syllabus Acknowledgement forms	*All students and parents should sign their respective syllabus acknowledgement forms.* *Students*: *https://forms.gle/N77JMXZMRtRGjCzUA* *Parents*: *https://forms.gle/CkGducByMGwdC4y29*