INTERNATIONAL AEROSPACE OLYMPIAD 2025

SPACETRIX
AEROSPACE

SYLLABUS - GRADE 5TH & 6TH

1. Differentiating Aerospace, Aeronautics, and Astronautics
1.1 Aerospace
- Definition: The field involving flight within Earth's atmosphere and beyond into space.
- Examples: Airplanes, rockets, and satellites.

1.2 Aeronautics
- Definition: The study and practice of flying in Earth's atmosphere.
- Examples: Airplanes, helicopters, and gliders.

1.3 Astronautics
- Definition: The science and technology of space exploration.
- Examples: Rockets, space stations, and interplanetary probes.

2. Airplane Basics
2.1 Parts of an Airplane
- Identification and functions of major parts:
  - Wings (lift), tail (stability), cockpit (control center), and engines (thrust).

2.2 How Airplanes Fly
- Concepts of lift, thrust, drag, and gravity (simplified explanation).

2.3 Types of Airplanes
- Passenger airplanes, cargo airplanes, and military airplanes.
- Differences between commercial and private jets.

3. Space Science and Technology
3.1 Rockets and Satellites
- How rockets work: Launch, propulsion, and stages.
- Types of satellites: Communication, weather, navigation, and research satellites.

3.2 Space Technology Advancements
- Space telescopes: Hubble, James Webb.
- Future technologies: Space tourism, Mars colonization, and reusable spacecraft.

4. Astronaut Details
4.1 Who is an Astronaut?
- Definition and role of astronauts in space exploration.

4.2 Astronaut Training
- Overview of astronaut training: Physical fitness, technical knowledge, and simulations.

4.3 Life in Space
- How astronauts live in space: Eating, sleeping, and working in microgravity.
- The role of the International Space Station (ISS).

5. Layers of the Atmosphere
5.1 Introduction to the Atmosphere
- Definition of the atmosphere and its importance for life.

5.2 Layers of the Atmosphere
- Troposphere: Weather and airplanes.
- Stratosphere: Ozone layer and high-altitude aircraft.
- Mesosphere: Meteors burning up.
- Thermosphere: Satellites and auroras.
- Exosphere: Edge of space.

6. 6.1 Global Aerospace Pioneers
- Yuri Gagarin: First human in space.
- Neil Armstrong and Buzz Aldrin: Moon landing.
- Elon Musk: Contributions to space technology.

7. 7.1 Exoplanets and the Search for Life
- What are exoplanets?
- Basics of the search for extraterrestrial life (SETI)