INTERNATIONAL AEROSPACE OLYMPIAD 2025

SPACETRIX
AEROSPACE

SYLLABUS - GRADE 3RD & 4TH

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. History of Flying
3.1 Ancient and Early Flight Attempts
- Myths and legends: Icarus and Da Vinci’s flying machine sketches.
- First flying tools: Kites and hot air balloons.

3.2 Pioneers of Flight
- Wright Brothers: First powered flight.
- Introduction to aviation pioneers like Otto Lilienthal.

3.3 Development of Modern Aviation
- Transition from wooden planes to metal aircraft.
- Introduction to supersonic jets (e.g., Concorde).

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. Famous Indian Astronauts in Aerospace
6.1 Rakesh Sharma
- First Indian in space: Mission aboard Soyuz T-11.

6.2 Kalpana Chawla
- Her journey and contributions as an astronaut.

6.3 Sunita Williams
- Achievements and record-setting space missions.

6.4 Other Contributions
- Highlighting India's role in aerospace: ISRO's advancements and missions (e.g., Chandrayaan, Mangalyaan).