



KAMARAJ IAS ACADEMY
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ISS trip draws closer, Shubanshu Shukla enters quarantine

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Context

- Group Captain Shubhanshu Shukla and other crew members of the Axiom-4 (Ax-4) mission to the International Space Station (ISS) are entering quarantine ahead of the scheduled launch on June 8 from the National Aeronautics and Space Administration's (NASA) Kennedy Space Center in Florida.
- The Ax-4 crew will spend up to 14 days at the orbiting laboratory.
- **Group Captain Shukla, who is also one of the four astronaut-designates selected for the Indian Space Research Organisation's (ISRO) Gaganyaan mission, will be the first Indian astronaut to reach the ISS, and the first Indian in space after 40 years (after Rakesh Sharma in 1984).**

Axiom - 4 mission

- Axiom Mission 4 (Ax-4) is a **private spaceflight to the International Space Station (ISS)**, operated by **Axiom Space, a US-based space infrastructure company.**
- It is the fourth mission in collaboration with NASA, following Axiom Missions 1, 2, and 3.
- **Commercial Space Initiatives:** Ax-4 aims to advance commercial activities in Low Earth Orbit (LEO), including **space tourism and the development of commercial space stations.**
- **International Collaboration:** The mission emphasizes global cooperation in space exploration, featuring a multinational crew.
- **Research and Development:** Ax-4 will support scientific experiments in **microgravity, focusing on areas like materials science, biology, and Earth observation.**
- The mission will use a **SpaceX Dragon spacecraft**, launched by a **Falcon 9 rocket.**
- The crew includes Commander Peggy Whitson (former NASA astronaut), Pilot Shubhanshu Shukla (ISRO, India), and mission specialists S?awosz Uznanski Wisniewski (Poland, ESA) and Tibor Kapu (Hungary)
- **Mission Duration:** The **14-day mission** will focus on scientific experiments, technology demonstrations, and educational outreach aboard the ISS.
- **Commercial Space Station Development:** Ax-4 is part of Axiom Space's vision to **establish the first commercial space station**, transitioning from ISS-based operations to an independent orbital platform.

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International Space Station (ISS)

- It is the **largest man-made structure in space, and was launched in 1998.**
- It functions as a **habitat for astronauts and has been continuously occupied since 2000.**
- Participating Agencies: The ISS is a joint effort of the space agencies of the **United States (NASA), Russia (Roscosmos), Europe (ESA), Japan (JAXA), and Canada (CSA).**
- Orbit: The ISS orbits approximately **400 kilometres above Earth (Low Earth Orbit)**
- Speed: It travels around Earth at about 28,000 kilometres per hour, **completing an orbit every 90 minutes.**
- Objectives: The ISS aims to advance our understanding of **space and microgravity, support new scientific research, and exemplify international collaboration.**