Future Plans in Space Exploration

NASA & United States – Artemis Program

(a)Artemis II (April 2026) marks NASA's first crewed lunar mission since Apollo 17, carrying four astronauts on a 10-day journey around the Moon. The crew includes commander Reid Wiseman, pilot Victor Glover, mission specialist Christina Koch, and Canadian astronaut Jeremy Hansen.

(b) Artemis III (September 2026) will attempt the first human lunar landing since 1972, specifically targeting the lunar South Pole region. This historic mission aims to land the first woman and first person of color on the Moon.

(c) The program continues with ambitious plans through the decade: Artemis IV (2028) will begin operations at the Lunar Gateway space station, Artemis V (2030) will deliver the third lunar landing with the Blue Moon lander, and missions extending to Artemis X (2035) promise increasingly extended stays of up to 180 days on the lunar surface.

**Mars Exploration – NASA**  
NASA's Mars 2035 mission represents the agency's most ambitious planetary exploration goal, planning to send humans on a scientific round trip to Mars. The journey will take approximately six to seven months each way, covering up to 250 million miles, with astronauts spending up to 500 days on the Martian surface.

**3. Deep Space and Science Missions – NASA**  
 (a)The ESCAPADE mission launches in December 2025, deploying two satellites nicknamed "Blue" and "Gold" to study Mars' plasma and magnetic fields, helping scientists understand how Mars lost its atmosphere.

(b)NASA-ISRO's NISAR satellite launched July 30, 2025, marking the first joint Earth observation collaboration between the two agencies, providing all-weather imaging of Earth's land and ice surfaces.

**4. SpaceX – Mars Ambitions  
(a). SpaceX has announced its most ambitious Mars timeline yet, planning to launch the first uncrewed Starship missions to Mars in 2026. Five Starships will test landing capabilities during the next Earth-Mars transfer window.**

**(b)** **If successful, crewed Mars missions could begin within four years, with Elon Musk outlining an aggressive expansion plan: approximately 20 missions during the 2028-29 window, 100 missions during 2030-31, and up to 500 missions by the 2033 launch window.**

**5. ISRO – India  
*(a)Gaganyaan Human Spaceflight Program*  
 India's human spaceflight program progresses with Gaganyaan-1 (Q4 2025) as the first uncrewed test flight, followed by Gaganyaan-2 and Gaganyaan-3 (both 2026), culminating in Gaganyaan-4 (2026) – India's first crewed mission that would make India the fourth country to independently send humans to space.**

***(b)Lunar and Planetary Missions*  
 Chandrayaan-4 (2027) will conduct India's first lunar sample-return mission.  
Venus Orbiter Mission (March 29, 2028) will study Venus's atmosphere.  
The Mars Lander Mission (2031), also called Mangalyaan-2, will include a lander, rover, and helicopter similar to NASA's Ingenuity.**

**6. Russia  
Luna-26 orbiter now scheduled for 2028.  
Luna-27 and Luna-28 missions will follow.  
Venera-D Venus mission delayed to 2036.**

**Russia continues its ILRS partnership with China, planning an automated nuclear power station on the Moon by 2035.**

**7. International Space Station Transition**  
*Lunar Gateway*  
The Gateway will begin assembly in 2027 and host crew operations from 2028 with Artemis IV.

*Commercial Space Stations*  
ISS is planned for deorbit around 2030. Companies such as Axiom Space are developing replacements, beginning with modules attached to the ISS in 2025.

8. **China (Lunar Exploration Program)**

(a). Chang'e 7 (2026) will explore the Moon's South Pole, studying the distribution and sources of lunar water and volatiles while photographing energetic neutral particles in Earth's magnetotail.

(b). Chang'e 8 (2028) will test on-site resource utilization technologies, laying the foundation for China's planned lunar science station