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NASA's astronauts stranded in space for 9 months returned to earth by SpaceX ship

SCIENCE & TECHNOLOGY

Home at last: After an unexpected nine-month stay in space, a pair of NASA astronauts finally returned to earth on Indian time Wednesday , concluding a mission that gripped global attention.

What happens if astronauts stay in space too long?

Prolonged exposure to microgravity leads to:

- **Increased risk of kidney stones** due to excess calcium loss
- **Weakened immune system**, making astronauts more prone to infections
- **Vision impairment**, as fluids press against the optic nerve
- **Radiation exposure**, increasing cancer risks

Every extra day in space pushes the body to its limits.



1. Starliner spacecraft: The Starliner spacecraft carried NASA astronauts Sunita Williams and Butch Wilmore to the International Space Station (ISS) in June 2024. Its return journey to Earth was initially scheduled for June 26 but was postponed due to issues detected in some key mechanisms required for a safe flight.

2. SpaceX's Crew Dragon: Crew Dragon is one of the two variants of SpaceX's Dragon 2 spacecraft, which is partially reusable. The other variant is Cargo Dragon. As their names suggest, Crew Dragon primarily ferries astronauts to the ISS and Cargo Dragon supplies cargo to the space station.

3. Space anaemia: When Sunita Williams' return was postponed, concerns about the health effects of space travel gained attention. One condition that emerged as a significant concern was space anaemia.

Space anaemia is a condition observed in astronauts during and after extended space missions. Unlike anaemia on Earth, which is often caused by nutritional deficiencies or chronic diseases, space anaemia is primarily due to the body's adaptation to the unique environment of space, said Dr Narendra Singhla, Lead Consultant – Internal Medicine at the CK Birla Hospital, Delhi.

4. Impact of Space Travel on Astronauts — from 'Baby Feet' to Bone Density Loss: Astronauts in space experience significant physiological changes due to prolonged exposure to microgravity, radiation, and isolation. According to former NASA astronaut Leroy Chiao, Sunita Williams and Butch Wilmore might experience trouble in walking as and when they return to Earth, as he claimed that due to prolonged exposure to space walking, astronauts develop "baby feet", reports stated.

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Cabinet approves ₹1,500-crore UPI incentive to banks

ECONOMY

The Union Cabinet on Wednesday announced an incentive scheme for Unified Payments Interface (UPI) payments of less than ₹2,000 for 2024-25 with an outlay of around ₹1,500 crore. Banks will get a 0.15% incentive, one-fifth of which will be incumbent on adequate performance of their infrastructure over the year. The incentive will be paid out in the case of payments to small merchants.

About Unified Payments Interface (UPI)

- The UPI is a digital and real-time payment system developed by the National Payments Corporation of India (NPCI) and regulated by the Reserve Bank of India (RBI).
- It was launched on April 11, 2016.
- It is designed to enable peer-to-peer inter-bank transfers through a single two-click factor authentication process.
- Features:
 - Unlike traditional methods, UPI simplifies transfers using the recipient's UPI ID, be it a mobile number, QR code, or Virtual Payment Address, eliminating account numbers.
 - It eliminates the need to enter bank details or other sensitive information each time a customer initiates a transaction.
 - A consistent UPI transaction PIN across apps enhances cross-operability, enabling 24/7 transactions.
 - UPI operates as a digital public infrastructure, allowing seamless interactions for all players, including merchants and customers, without transaction costs.
 - UPI uses technologies like the Immediate Payment Service (IMPS) and the Aadhaar-Enabled Payment System (AEPS) to ensure that payments between accounts go smoothly.
 - It facilitates push (pay) and pull (receive) transactions and even works for over-the-counter or barcode payments, as well as for multiple recurring payments such as utility bills, school fees, and other subscriptions.
 - It also works with "Peer-to-Peer" requests, which can be scheduled and paid for based on need and

Prioritise north-south river-linking project: DMK

GEOGRAPHY

Dravida Munnetra Kazhagam MP T.R. Baalu on Wednesday made a strong pitch for linking rivers in North and South India, and urged the Centre to expedite the inter-Interlinking of Rivers



National River Linking Project (NRLP)

Aimed to link different surplus rivers of country with the deficient rivers so that the excess water from surplus region could be diverted to deficient region.

Background: The National Perspective Plan (NPP) was prepared by the then Ministry of Irrigation (now Ministry of Jal Shakti) in August 1980.

Under the NPP, the National Water Development Agency (NWDA) has identified 30 links (16 under Peninsular Component & 14 under Himalayan Component) for preparation of Feasibility Reports.

In 2021, Union Cabinet approved the implementation of Ken Betwa river link - first interlinking of rivers project.

Benefits of Interlinking of Rivers

- Irrigation Facility: As per National Perspective Plan, the Interlinking of Rivers Projects aims to benefit 35 million hectares of irrigation (25 million ha from surface waters and 10 million ha by increased use of ground waters).
- Hydro power Generation: Help in generation of around 34000 Megawatt of hydro power (National Perspective Plan).
- Water Security: Increasing water availability for drinking and industrial purposes.
- As per NITI Aayog's Composite Water Management Index India is undergoing the worst water crisis in its history and nearly 600 million people are facing high to extreme water stress.

- Inland water ways: Once canals are built, they will also be used as waterways for navigation, reducing stress on road/rail transport.
- Tackle droughts and floods: As per World Meteorological Organisation, Economic losses in 2022 due to disasters relating to floods in India are estimated to be over US\$ 4.2 billion. State riverlinking project because of its economic and logistic benefits.

Cabinet approves additional outlay for Gokul Mission

SCHEMES

The Union Cabinet on Wednesday revised the Rashtriya Gokul Mission (RGM) with a total outlay of ₹3,400 crore. Union Information and Broadcasting Minister Ashwini Vaishnaw said the move will boost growth in livestock sector in India. The additional outlay for the scheme as the component of Union government for the period between 2021-22 and 2025-26 will be ₹1,000 crore. Mr. Vaishnaw said the Cabinet had added two new activities: one-time assistance of 35% of the capital cost for establishment of heifer rearing centres and encouraging farmers to purchase high genetic merit.

Rashtriya Gokul Mission Objectives

Following are the Objectives of Rashtriya Gokul Mission-

- Promotion and conservation of indigenous cattle breeds.
- Breed Development Programmes will be conducted in order to improve the genetic profile of indigenous cattle breed and raise livestock.
- Improve the productivity of indigenous bovine animals and increase the production of milk.
- Low quality cattles will be bred with premium indigenous breeds like Gir, Sahiwal, Rathi etc. to improve their productivity.
- Addressing sanitary and phytosanitary problems and then increasing trade in animals and livestock products in western countries.
- To set up an e-marketplace online to interconnect bovine germplasm to breeders and farmers.
- All female bovines will be brought under organised breeding using modern technologies like artificial insemination.

Is the APAAR ID for students mandatory?

POLITY

Activists and parents are worried about the rapid push by schools to generate an APAAR ID. APAAR is part of the National Education Policy (NEP), 2020's record-keeping reforms, and while it is voluntary, States and school authorities have pushed students to enrol in it.

What is the APAAR ID?

APAAR stands for Automated Permanent Academic Account Registry. The registry enables what the government describes as the 'One Nation, One Student ID', in order to "accumulate and store [students'] academic accomplishments, facilitating seamless transitions between institutions for the pursuit of further education". The APAAR ID is linked to Aadhaar and is stored in the DigiLocker. The registry provides students with standardised data on their marksheets and institutional affiliation. The system is touted as a way for different educational institutes to rapidly process and verify any given student's academic transcripts. APAAR is generated through the Unified District Information System For Education Plus (UDISE+) portal, which contains regional academic statistics and data on schools, teachers and students.

Is APAAR mandatory?

APAAR is not mandatory, according to a document posted on the ID's official site. However, circulars by the CBSE, and FAQ pages that have been published by the government, do not make this clear. The government has instead described the benefits of APAAR to students, such as permanently recording data on "transfer from one school to the other, entrance examination, admission, job application, skilling, upskilling," and so on.

IndiaAI Mission and Gates Foundation to sign pact on AI

SCIENCE & TECHNOLOGY

The Union government's IndiaAI Mission will soon sign a memorandum of understanding with the Gates Foundation to cooperate on "AI solutions for better crops, stronger healthcare, smarter education & climate resilience," Minister of Electronics and Information Technology Ashwini Vaishnaw said on social media platform X on Wednesday.



IndiaAI Mission: Driving AI Innovation in India

- The IndiaAI Mission was initially launched as a joint initiative between the Ministry of Electronics and Information Technology and Nasscom in 2023.
- It has since evolved into a government-led initiative with an outlay of ₹10,371.92 crore.
- The mission's key goals are:
 - **"Making AI in India"** – Encouraging domestic AI development.
 - **"Making AI Work for India"** – Ensuring AI benefits various sectors in the country.
- This initiative aims to bolster India's AI ecosystem by making high-end computing resources accessible to startups and researchers.

Key Pillars of the IndiaAI Mission

- The IndiaAI Mission comprises seven pillars, with a focus on building India's AI capabilities across various domains.

Common Compute Facility

- Provides GPU access to startups and researchers.
- Aims to reduce dependency on costly foreign computing resources.

AI Kosha (IndiaAI Datasets Platform)

- Develops India-specific datasets to improve AI models.
- Reduces bias from Western-trained AI models by incorporating local language and cultural data.

AI Safety Institute of India (Upcoming)

- Focuses on AI risk assessment and safety guidelines.
- Ensures AI tools are reliable and secure, preventing misuse.

IndiaAI Innovation Centre

- Develops domain-specific foundation models for various industries.

AI Application Development Initiative

- Supports AI-based solutions for commercial and societal applications.

Future Skills Initiative

- Establishes AI labs in smaller cities to foster skill development.

Startup Financing

- Provides financial support to AI startups to boost innovation.

Building India's Own Foundation Model

- The IndiaAI Mission has invited proposals to develop an indigenous AI foundation model.
- 67 applications have been received, and the government aims to fast-track the process within months.

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Head Office:

Vedhik IAS Academy
Mercy Estate,
MG Road, Ravipuram,
Ernakulam-682 015,

Corporate office:

Vedhik IAS Academy
Samkalp Bhawan, Plot No.15,
Sector 4, Rama Krishna Puram,
New Delhi, Delhi-110022

Regional office

Vedhik IAS Academy
202, Raheja Chambers, 12,
Museum Road. Bangalore -
560001. Karnataka, India.

GCC Office:

Bobscoedu,

Bobsco Educational Solutions WLL
Office No: 201, Floor: 2
AL RAYA SHOPPING CENTRE WLL
Bldg. 517, Road 2408, Area 324,
Al Fateh, Manama, Kingdom of Bahrain
www.bobscoedu.com