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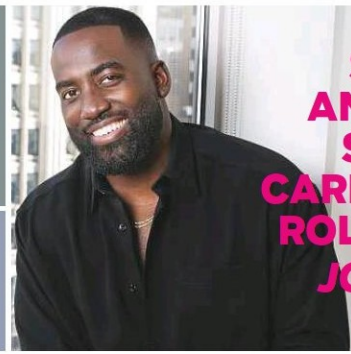
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## Rashid rover set to land on Moon on April 25

**DUBAI**  
**BY SAJILA SASEENDRAN**  
Senior Reporter

The Mohammad Bin Rashid Space Centre (MBRSC) announced yesterday that Rashid rover, onboard the Hakuta-R Mission 1 Lunar Lander, is scheduled to land on the Moon on April 25 at 8.40pm (UAE time).

The landing date is subject to change depending on operational conditions. The rover is currently orbiting the Moon at an altitude of about 100km at the perilune (perapsis) and about 2,300km at the apolune (apoapsis). The points in the orbit that is closest to the centre of the Moon are called perilune, and the farthest, apolune.

At around 7.40pm on April 25, the lander will perform multiple orbital control manoeuvres to reach a 100km circular orbit around the Moon before initiating the landing sequence.

**SEE ALSO P4**

## Launch of Dewa-SAT2 planned for tomorrow

**DUBAI**  
Gulf News Report

Dubai Electricity and Water Authority (Dewa) yesterday said its nanosatellite Dewa-SAT2 would be launched tomorrow after bad weather delayed the launch yesterday.

The nanosatellite will be launched at 10.30am on a SpaceX Falcon 9 rocket from Vandenberg Space Force Base in California.

Dewa said the nanosatellite launch had been originally scheduled for liftoff on April 11, but was moved to April 12, before it was again rescheduled to April 14 due to unfavourable weather.

Dewa SAT-2 was designed and developed at Dewa's Research and Development Centre at the Mohammad bin Rashid Al Maktoum Solar Park, in cooperation with NanoAvionics in Lithuania. It features a high-resolution camera that will be used for Earth observation missions.

The camera provides continuous imaging in seven spectral bands from approximately 500km orbit.

### Onboard equipment

The satellite is equipped with Infrared equipment to measure greenhouse gases.

It will improve the efficiency of generation, transmission, and distribution divisions by monitoring solar power plants and enhancing accuracy of generation predictions.

# How Al Neyadi works out in space

UAE ASTRONAUT POSTS VIDEO OF HIMSELF RUNNING ON A TREADMILL IN MICROGRAVITY OF ISS

**DUBAI**  
BY SAJILA SASEENDRAN  
Senior Reporter

Life in space comes with unique challenges and UAE astronaut Sultan Al Neyadi, who is on the longest Arab space mission, has shared how he is embracing them by posting a video that shows his acrobatic skills in putting on sneakers and running on a wall in microgravity.

"Unlike on Earth, strapping in for a run on the space station can be quite the adventure. Here's a video of me embracing the unique challenges that come with working out on the ISS," Al Neyadi posted while sharing a video of his preparations for exercise on the International Space Station (ISS).

In the more than two-minute-long video, Al Neyadi has enthused space aficionados with his routine to prepare for a workout on a treadmill that is suspended from the side wall of a module on ISS.

He can be seen floating into a module and fetching a pair of running shoes from the roof of the module. He then leaves the left shoe to float around and tries to put on the right shoe first. Al Neyadi floats on his back without holding on to anything and skillfully puts on the right shoe, grabs the left one, flips around, touches the floor and pushes himself away again to wear the left shoe in the second attempt as he faces down.

### Weightless workout

After donning the trainers, he pulls down a shoulder and waist harness from the roof of the module and wears it. Al



In the over two-minute video, Al Neyadi takes viewers through his fitness routine on the ISS, from floating around to fetching and wearing a pair of running shoes and eventually jogging in a horizontal position on a treadmill suspended from the side of a module.

### DID YOU KNOW?

Exercise is a countermeasure to prevent deterioration of muscles and bones in space. Several types of equipment have been used in reduced gravity to evaluate and maintain astronaut fitness.



Watch Al Neyadi perform his acrobatic workout orbiting 400km above Earth

He then offers the unique view of his weightless workout for about 20 seconds, jogging in a 'horizontal' position.

Demonstrating the benefits of exercise in space is one of the first activities that the Najmounat (Arab astronaut) dubbed the 'Sultan of Space' had shared in the first week after he floated into the ISS on March 3.

"On Earth, exercising is important. In space, it's vital. Aboard the International Space

Station, we exercise for 2.5 hours every day to avoid muscle atrophy and bone loss triggered by microgravity," Al Neyadi tweeted on March 10.

There are currently two treadmills on the ISS. The first is the BD-2 treadmill equipment located in the Zvezda Service Module. The second is the Combined Operational Load Bearing External Resistance Treadmill, or COLBERT, which is located in the Tranquility Module.

The second one is named after American comedian Stephen Colbert. Colbert's fans earned him the most entries for NASA's online naming poll of the station's Node 3. While NASA ultimately went with another

name for the node (Tranquility), they decided to name the treadmill in his honour instead.

Al Neyadi appears to have shot the latest video on BD-2, while his first image of exercise seems to have been taken from COLBERT which also collects data on the workouts to effectively report each astronaut's profile to scientists and health experts on the ground.

The space gym has also included an ARED (Advanced Resistive Exercise Device) to build strong muscles, a CEVIS (Cycle-Ergometer Vibration Isolation System), an unusual stationary bicycle to help improve cardio health, among other ergometer space bikes.

# Out Tomorrow



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## Details of Rashid Rover's Moon landing on April 25 revealed

Japanese lander currently orbiting the Moon at an altitude of about 100km

**DUBAI**  
BY SAJILA SASEENDRAN  
Senior Reporter

The Mohammad Bin Rashid Space Centre (MBRSC) today announced the target time of Moon landing for the Japanese lander carrying the Rashid Rover of the UAE's Emirates Lunar Mission.

MBRSC took to social media to announce that the landing date and time of the HAKUTO-R lander, carrying aboard the Rashid Rover, on the surface of the Moon, is set for April 25 at 8.40pm (UAE time).

"The date is subject to change depending on the mission's operations. Alternative landing dates are 26 April, May 1, and 3 May," MBRSC added.

On March 6, Gulf News had first reported the target date for the lunar landing of the first Emirati rover as April 25.

### Lunar orbit insertion

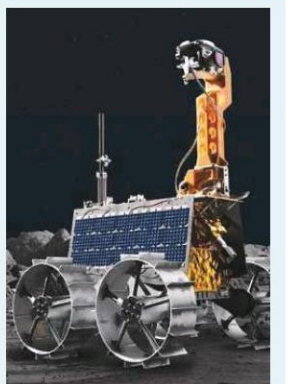
Salem Humaid Al Marri, director-general of the MBRSC, had revealed this at a Plenary Session during the inaugural day of the 17th International Conference on Space Operations (SpaceOps 2023) in Dubai.

On March 21, MBRSC announced the successful lunar orbit insertion by Rashid Rover.

"The iSpace lander carrying the Rashid Rover performed its first lunar orbit insertion manoeuvre in accordance with the mission operation plan, at

### HOW IT WILL HAPPEN

At around 7.40pm on April 25, the lander carrying Rashid Rover will perform multiple orbital control manoeuvres to reach a 100 km circular orbit around the Moon before initiating the landing sequence. During the landing sequence, the lander will perform a braking burn, firing its main propulsion system to decelerate from orbit. Utilising a series of pre-set commands, the lander will adjust its altitude and reduce velocity to land on the Atlas Crater in Mare Frigoris.



**370 minutes**

of communication will be completed by ELM with the rover before landing, along with 12 mission rehearsals for surface operations

are called perilune, and the farthest is known as apolune.

The ELM team will complete close to a total of 370 minutes of communication with the world's most compact rover before landing, along with 12 mission rehearsals for surface operations.

### Surface operations

These are crucial for the engineering team to be prepared and ready with their programmes for execution post the lunar landing. The rehearsals also enable the different teams on the subsystems to sync their operational work.

The next stage for the lander includes the completion of lunar orbital control manoeuvres before the landing sequence as well as confirm that it is ready to start the landing sequence. In case of any changes in operational conditions, three alternative landing sites, with landing opportunities have been scheduled.

5.24am UAE time on March 21, under the direction of lander engineers," MBRSC said.

After a controlled burn from the lander's main propulsion system lasting several minutes, the manoeuvre was completed.

### What's next

Yesterday, MBRSC said the Rashid Rover is currently orbiting the Moon at an altitude of about 100 km at the perilune (periapsis) and about 2,300 km at the apolune (apoapsis). The points in the orbit that is closest to the centre of the moon